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ABSTRACT

In this report, findings related to the process of selecting students for compensatory education (CE) programs on basic skills, and the economic and educational status of students selected are recorded. Chapter I explains the principle variables considered in research: family, economic status, reading and math CE selection status, teacher judgment of student CE need, kinds and amounts of educational services offered to and received by students, exposure to non-academic CE services, and early childhood education and experiences. Chapters II through V examine each of the variables and the relationships between them in detail, with abundant charts and tables to substantiate each finding. Chapter VI summarizes the CE research to date and offers recommendations for proposed alterations in the educational and economic criteria to expand the number of students targeted for CE. (Author/WI)

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STUDENT ECONOMIC AND EDUCATIONAL STATUS AND RECEIPT OF EDUCATIONAL SERVICES

Ronald H. Hinckley
Richard S. Beal
Vincent J. Breglio

TECHNICAL REPORT #3 FROM THE
STUDY OF THE SUSTAINING EFFECTS OF COMPENSATORY
EDUCATION ON BASIC SKILLS

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2700 NORTH MAIN STREET
SANTA ANA, CALIFORNIA 92701

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THE STAFF OF THE STUDY OF SUSTAINING EFFECTS

SYSTEM DEVELOPMENT CORPORATION:

Project Management. Launor F. Carter, Director; Raymond B. Stewart, Associate Director; Thomas F. Collins, Assistant Director for Planning and Control (1975-1978); Robert L. Lamoureux (1978-); Marilyn Stevenson (1975-1977); Patrice Metro (1977-).

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DECIMA RESEARCH:

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Cost/Effectiveness and Summer Study. Sue A. Haggart, Manager; Leonard S. Klibanoff; Nabeel Al-Salam (1975-1977); Laurence A. Dougharty (1976-1977); Gerald C. Sumner (1977-).

PACIFIC CONSULTANTS:

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Office of Planning, Budgeting, and Evaluation. George W. Mayeske, Project Officer; Janice K. Anderson, Deputy Project Officer; Kathryn E. Crossley, Administrative Assistant.

Division of Education for the Disadvantaged. Paul Miller, William Lobosco, Velma James.

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A PRECIS OF THE SUSTAINING EFFECTS STUDY AND AN OVERVIEW OF THE PRESENT VOLUME

THE SUSTAINING EFFECTS STUDY

In response to a large number of questions relevant to educational policy, SDC has undertaken the task of examining compensatory education (CE) in depth. Compensatory education will be examined in kind, quantity and environment; its sustained effects and its generality. This intention is embraced by the large study: Evaluation of the Sustaining Effects of Compensatory education on Basic Skills, or briefly stated, The Sustaining Effects Study. This thorough study will eventuate in a multi-volume serial publication of independent and interdependent reports, organized according to the following sub-studies:

The Longitudinal Study. In the Longitudinal Study, the educational achievements of a large number of children will be assessed in the fall and spring for three consecutive years. The children will take an achievement test in reading and mathematics, a functional literacy test, and a measure of attitude towards school and towards themselves as students. The amount and nature of instruction in reading and mathematics will be determined for each student four times during the school year. In addition, teachers and principals will report summarily on their theories and thoroughly on their practices of instruction and teaching. Thus, it will be possible not only to assess student growth over a three-year period, but to relate this growth to the kinds and amounts of instruction being received.

The schools in the study were drawn from three different groups. The **Representative Sample** of schools is a sample carefully drawn to represent all of the nation's public schools having some of the grades one through six. A second group of schools, the **Comparison Sample**, is composed of schools that have large proportions of students from high-poverty-level homes, but do not receive special funds to offer compensatory-education services. The third group is the **Nominated Sample**, composed of schools that were nominated because their instructional programs were thought to have promise as being unusually effective for low-achieving students. During the first operational year of the study, data have been collected from 328 schools and about 118,000 students.

The Cost/Effectiveness Study. Information is being obtained on the resources and services to which each student is exposed during reading and mathematics instruction. Upon the basis of this information, the cost estimates will be generated. Because the effectiveness of the instructional programs will be determined as part of the Longitudinal Study, it will then be possible to relate measured effectiveness to the measured cost of each program.

The Participation Study. The purpose of the Participation Study is to determine the relationships among economic status, educational need, and instructional services received. The educational achievement of the students and the services they receive will be obtained in the Longitudinal Study, but the refined measures of economic status will be obtained in the Participation Study. A random sample of over 15,000 students was drawn from the schools

in the first-year Representative Sample and visits were made to the homes of these students. During the visits, information was collected on the economic level of the home and on the parents' attitudes towards their child's school and learning experiences. Thus, the level of student achievement and services received can be related to the economic level of the home from which the student comes.

The Summer Study. The Sustaining Effects Study includes an examination of the effectiveness and cost-effectiveness of summer school programs attended by the students of the SES. RMC Research, responsible for conducting the summer study, is investigating a series of policy questions relating to summer school. Programmatic information about the 1977 summer school experiences of the SES students is being combined with the broader SES data base. The resource cost model, developed for the regular-year cost-effectiveness studies, is being adapted to the needs of the summer school study.

The Successful Sites Study. The major objective of the in-depth study is to identify and describe the instructional practices and contexts that appear to be effective in raising the reading and math achievements of educationally disadvantaged students. In-depth observational and interview data will be collected from approximately 50 schools that are also participating in the Sustaining Effects Study. High-poverty schools will be the focus of the study since they generally have high concentrations of entering educationally disadvantaged pupils and are most in need of both compensatory education monies and successful compensatory practice models.

OVERVIEW OF THE PRESENT VOLUME

This is the third technical report in a series emanating from the Study of the Sustaining Effects of Compensatory Education on Basic Skills. This report extends the findings relating to students' economic and educational status and selection for compensatory education (CE) as reported in the second technical report. Chapter 1 introduces the principal variables: family economic status, reading and math CE selection status, teacher judgment of student CE need, the kinds and amounts of educational services offered to and received by students, exposure to non-academic CE services, and early childhood educational experiences. Chapter 2 presents a detailed examination of the relationships among economic status and achievement as selection factors for reading and math CE programs. The effect of teacher judgment of CE need on selection for CE programs also appears in this chapter. Chapter 3 reports on the educational services offered to and received by elementary school children. The number of weeks of school attended, the amount of reading and math instructional services offered students and the total hours of reading and math instruction actually received during the school year are provided. Chapter 4 presents an analysis of the hours of reading and math services received by students according to teacher type (regular teacher, non-regular teacher, special teacher, aide, or tutor, and class activities independent of a teacher) and instructional setting (classes with 14 or more students, classes with 2 to 13 students, and situations where the student engages in learning apart from other students). Chapter 5 examines non-academic compensatory services (guidance, counseling, health and nutrition) and early childhood educational experiences (pre-primary programs such as kindergarten, Head Start, day care centers, etc.). Chapter 6 is a summary of both the second and third technical reports reviewing the principal findings about family economic status, achievement and CE. Chapters 2 to 6 need not be read in sequence. With Chapter 1 as an introduction, attention may be focused on any other chapter independent of the order of presentation. Chapters 3 and 4, however, should probably be read in conjunction with one another.

THE PRINCIPAL RESEARCH VARIABLES CONSIDERED IN THIS REPORT

Family Economic Status is defined in terms of those students counted or not counted using the current Title I allocation criteria. Counted students are from families whose 1976 income falls below the official poverty level or who receive AFDC payments. Institutionalized, neglected, or delinquent children or foster children attending public schools are also included. These students, counted by using the allocation criteria, number 4.2 million, and make up nearly 21 percent of the student population in grades one through six. *Student Educational Status* is defined in terms of the Comprehensive Test of Basic Skills for math and reading. Percentile scores developed especially for this study are used for reading and math. Reading and math achievement is usually presented in terms of a quartile distribution. *Reading and Math CE Selection Status* is defined in terms of whether or not a student has been selected to participate in a Title I or non-Title I CE program. Overall, about 2.6 million students are selected for Title I reading and 1.4 million for Title I math programs. Another 2.2 million students are selected for non-Title I funded CE services in reading and 1.9 million in math. Altogether about 25 percent of the population is selected for some form of reading or math CE (15 percent in the case of Title I selectees). *Students*

Rated by Teacher as Needing CE Services is defined in terms of those students judged as needing only reading services (10%), those only needing math services (3%), and those needing both reading and math services (20%).

Attendance is defined in terms of the number of weeks a student is present in school during the year. It is a product of the length of the school year and absenteeism. On the average, students spend 33.8 weeks a year in school. The *Total Hours of Reading Offered* a student during the school year is about 246, of which the average student attends 232 hours *(Total Hours of Reading Attended). The Total Hours of Math Offered* is 174 and the *Total Hours of Math Attended* is 165. The larger part of reading (134 hours) and math (101 hours) learning is spent being instructed by a regular teacher. Next comes learning *Independent of a Teacher* (78 hours for reading and 54 hours for math) and, finally, work with a *Non-Regular Teacher* (19 hours for reading and 8 hours a year for math). The size of the instructional group provides three variables for analysis. Most math instruction is conducted in a large group setting – classes with *14 or More Students* (77 hours). Only 59 hours of reading are conducted in these size groups. Most reading is done in small groups (93 hours in *Classes with 2 to 13 Students*). Only 31 hours of math instruction per year takes place in these smaller classes. The second largest instructional setting for both reading and math is *Individual Instruction or Learning,* where the student studies apart from other students either with or without an instructor. Eighty hours of reading and 55 hours of math occur in this setting.

Non-Academic Compensatory Services is defined in terms of student participation in guidance and counseling programs and health and nutrition programs. About 3 percent of the sample participated in compensatory guidance and counseling programs and 5 percent of all students surveyed for this report received compensatory health and nutrition services. Lastly, about 88 percent of the sample of students participated in pre-primary *Early Childhood Educational Experiences.* This variable indicates whether a child has participated in one or more of the following programs: Kindergarten (85 percent participation rate), Nursery/Day Care Center (11%), Pre-School (8%), Head Start (7%) and pre-primary Summer School (5%).

RESULTS OF THE PARTICIPATION STUDY

Household data were obtained from the parents of over 15,000 elementary school children. The survey instrument contained 166 informational items. These items have been linked to data items from other SES instruments administered in the schools and are reported in terms of several major areas of interest. The results focus on national reading and math CE selection rates and receipt of educational services at the student level only. Inferences about how Title I will reach different student groups must be made with caution, since no fixed national criteria for the selection of students and schools currently govern the program. The highlights of each area of interest are reported below.

Economic Status and Selection for CE. On a proportional basis, CE selection is higher among the poor than the non-poor for both reading and math. Students from poor families are selected more frequently for Title I programs than for non-Title I funded services. About 61 percent of the poor children in the nation are not selected to participate in any reading CE program and about 71 percent are not selected for participation in any math CE

program. About 20 percent of all non-poor children are selected for reading CE and about 13 percent for math CE; hence, in absolute numbers the non-poor selectees exceed the poor, both for Title I and for Other CE services. The estimated percentages and frequencies of students selected for CE by economic status are shown below. In viewing these results, it should be understood that selection for Title I at the student level is based not on economic status but on educational achievement.

Economic Status and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
Poor/AFDC				
Title I Selectees	25	1,062,000	16	669,000
Other CE Selectees	14	573,000	13	531,000
No CE	61	2,546,000	71	2,981,000
Total Poor/AFDC	100	4,181,000	100	4,181,000
Non-Poor				
Title I Selectees	9	1,487,000	5	760,000
Other CE Selectees	10	1,583,000	9	1,361,000
No CE	81	12,755,000	87	13,704,000
Total Non-Poor	100	15,825,000	101	15,825,000

Economic Status and Selection for CE. CE selection is proportionately higher for low achievers than for high achievers. Using the percentile measure for educational status suggests that most of the CE selectees, particularly Title I selectees, score below the national median (50th percentile). More students who achieve above the national median in reading and math are selected for Other CE programs than are selected for Title I programs, as shown below.

Educational Status and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
25th Percentile and Below				
Title I Selectees	27	1,327,000	14	683,000
Other CE Selectees	17	836,000	13	630,000
No CE	56	2,698,000	73	3,508,000
Total in Bottom Quarter	100	4,861,000	100	4,821,000
26th to 50th Percentile				
Title I Selectees	17	855,000	9	457,000
Other CE Selectees	12	630,000	10	506,000
No CE	71	3,636,000	80	3,898,000
Total in Second Quarter	100	5,121,000	99	4,861,000

Educational Status and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
51st to 75th Percentile				
Title I Selectees	5	274,000	4	219,000
Other CE Selectees	8	427,000	8	413,000
No CE	86	4,382,000	88	4,590,000
Total in Third Quarter	99	5,083,000	100	5,222,000
76th Percentile and Above				
Title I Selectees	2	109,000	2	76,000
Other CE Selectees	5	262,000	7	337,000
No CE	93	4,570,000	92	4,689,000
Total in Top Quarter	100	4,941,000	101	5,102,000

Economic Status, Educational Status and Selection for CE. The combined measures of economic and educational status differentiate between students selected and not selected for Title I and other CE services. The greatest proportion selected for Title I and Other CE is from the low-income and low-achievement group. However, half of these students are not selected for any CE reading services and two-thirds receive no math CE services, as indicated in the following tabulation.

Economic Status, Educational Status, and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
Poor/AFDC and Below 50th Percentile				
Title I Selectees	32	964,000	20	573,000
Other CE Selectees	15	471,000	14	402,000
No CE	53	1,626,000	66	1,918,000
Total Poor/AFDC in Bottom Half	100	3,061,000	100	2,893,000

The group with the next highest selection rates includes the educationally but not economically needy, followed by the economically but not educationally needy, as shown below.

Economic Status, Educational Status, and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
Non-Poor and Below 50th Percentile				
Title I Selectees	18	1,226,000	8	574,000
Other CE Selectees	14	996,000	11	734,000
No CE	68	4,724,000	81	5,497,000
Total Non-Poor in Bottom Half	100	6,946,000	100	6,805,000
Poor/AFDC Above 50th Percentile				
Title I Selectees	9	100,000	8	100,000
Other CE Selectees	9	98,000	9	120,000
No CE	82	922,000	83	1,068,000
Total Poor/AFDC in Top Half	100	1,120,000	100	1,288,000

The group with the lowest proportion of students selected for CE is neither low-income nor low-achieving. It should be noted in the tabulation presented below that the selection rate for Other CE has not dropped off as dramatically as it has for Title I.

Economic Status, Educational Status, and CE Selection Status	READING		MATH	
	Projected Percentages	Projected Frequencies	Projected Percentages	Projected Frequencies
Non-Poor and Above 50th Percentile				
Title I Selectees	3	268,000	2	191,000
Other CE Selectees	7	580,000	7	621,000
No CE	90	8,031,000	91	8,208,000
Total Non-Poor in Top Half	100	8,879,000	100	9,020,000

Teacher Judgment of CE Need. Teacher judgment plays an important role in selection of CE: regardless of the economic or achievement category those judged needy are more likely to be selected for CE than those judged as not needy. The following tabulation presents a good example of the impact of teacher judgment on selection for CE.

Economic Status, Educational Status, Teacher Judgment of CE Need and CE	Percentage for Reading	Percentage for Math
Poor/AFDC Bottom Half Judged Needing CE		
Title I Selectees	44	30
Other CE Selectees	19	17
No CE	37	53
Total	100	100
Poor/AFDC Bottom Half Judged Not Needing CE		
Title I Selectees	9	8
Other CE Selectees	10	10
No CE	81	82
Total	100	100

Economic and Educational Status. A significant relationship exists between students' economic status and educational achievement. Seventy-four percent of the poor achieve below the national median in reading and 70 percent achieve below the median in math, as shown in the tabulation below.

Economic Status and Educational Status	Percentage for Reading	Percentage for Math
Poor/AFDC		
Bottom Quarter	43	40
Second Quarter	31	30
Third Quarter	17	21
Top Quarter	9	10
Total Poor/AFDC	100	101
Non-Poor		
Bottom Quarter	20	20
Second Quarter	24	23
Third Quarter	27	28
Top Quarter	29	29
Total Poor/AFDC	100	100

School Attendance, Reading and Math Services Offered and Attended. Poverty has a significant relationship with the amount of time children spend in school. Students from impoverished homes attend one week less school than other students, as indicated in the following tabulation.

Economic Status	Average Number of Weeks of School Attended
Poor/AFDC	33
Non-Poor	34

Economic Status and CE Selection Status are strongly related to the number of hours of reading and math offered students during the school year. The following results indicate that poor Title I selectees are offered the greatest number of hours of reading and math instruction. For reading, Other CE selectees are offered the second highest number of hours of instruction, but for math those not selected for any CE are offered more hours than those selected for Other CE.

Economic Status and CE Selection Status	Average Number of Hours of Instruction Offered	
	Reading	Math
Poor/AFDC		
Title I Selectees	287	190
Other CE Selectees	253	161
No CE	245	169
Non-Poor		
Title I Selectees	243	182
Other CE Selectees	255	162
No CE	238	163

Because of the low attendance among poor students they do not differ significantly from the non-poor students in the extent to which they attend reading and math programs. For instance, while poor Title I selectees are offered 44 more hours of reading than non-poor selectees, they only attend 5 more hours of reading instruction. In the later grades, race is an important predictor of the number of hours of reading and math offered and attended. Minority students are offered and attend more hours of instruction in these two subjects than do whites.

Reading and Math Instructional Settings. In reading there is no basic difference between the poor and the non-poor in the hours of instruction from a regular teacher. However, the poor receive more hours of instruction from a non-regular teacher across achievement, CE selection status, race, and grade. On the other hand, the non-poor receive more hours than the poor of reading independent of a teacher. So poor students generally receive more hours of instruction in reading by a non-regular teacher, and the non-poor spend more time independent of teacher instruction, as the following tabulation shows.

Type of Teacher	Average Hours of Reading Instruction Received	
	Poor/AFDC	Non-Poor
Regular Teacher	134	134
Non-Regular Teacher	32	16
Independent of a Teacher	71	80

Family economic status is related to the hours spent in reading classes of various size. For Title I selectees, and students not selected for any CE, more hours are spent in large group reading by the poor than the non-poor students. The situation is reversed for students selected for Other CE, as the following tabulation indicates.

Economic Status and CE Selection Status	Average Hours of Reading Instruction in Various Size Class Settings		
	14 or More Students	2 to 13 Students	Apart from Other Students
Poor/AFDC			
Title I Selectees	55	146	62
Other CE Selectees	30	132	72
No CE	67	83	78
Non-Poor			
Title I Selectees	47	139	71
Other CE Selectees	37	128	76
No CE	64	79	84

Basically, the non-poor in each CE selection category receive more hours of instruction apart from other students than the poor, who receive the bulk of their reading instruction in group settings, particularly small classes.

In the area of math instruction the overall effects of family economic status are quite similar to those for reading. The poor spend just slightly more time learning math from a regular teacher than the non-poor. As with reading, the poor receive more hours of instruction from a non-regular teacher than the non-poor. These results are highlighted in the following tabulation.

Type of Teacher	Average Hours of Math Instruction Received	
	Poor/AFDC	Non-Poor
Regular Teacher	105	101
Non-Regular Teacher	15	7
Independent of a Teacher	52	56

No significant difference exists on the basis of family economic status for the hours of math received in large instructional groups and in the area of learning apart from other students. However, in the case of instruction in small groups, the poor consistently receive more hours of service than the non-poor across all CE selection categories as shown below.

Economic Status and CE Selection Status	Average Hours of Math Instruction in Various Size Class Settings: 14 or More Students	2 to 13 Students	Apart From Other Students
Poor/AFDC			
Title I Selectees	71	75	44
Other CE Selectees	51	59	51
No CE	81	33	55
Non-Poor			
Title I Selectees	70	64	48
Other CE Selectees	53	50	59
No CE	81	25	57

For both reading and math, Title I selection is associated with above average hours of instruction by a non-regular teacher and a small group setting. The amount of time spent by Title I selectees in these instructional circumstances varies by achievement level. Low achievers spend the most time, high achievers the least. So, while some high achievers are selected for Title I services, the actual amount of services they receive is more comparable to other high achievers than other Title I selectees. As the following tabulation suggests, actual receipt of services appears to be based more on achievement for these students than on designation for Title I services.

Subject, Title I Selection and Achievement	Average Hours of Instruction Received: Non-Regular Teacher	Class With 2-13 Students
Reading Title I Selectees		
Bottom Quarter	68	142
Second Quarter	66	145
Third Quarter	51	130
Top Quarter	42	141
Math Title I Selectees		
Bottom Quarter	44	75
Second Quarter	42	70
Third Quarter	29	56
Top Quarter	12	34

Non-Academic Compensatory Services. More poor students than non-poor students are exposed to non-academic compensatory services, particularly health and nutrition, as the following tabulation reveals.

Economic Status	Percentage Receiving Services: Guidance and Counseling	Health and Nutrition
Poor/AFDC	3.3	12.4
Non-Poor	2.5	2.8

Early Childhood Experiences. A greater proportion of non-poor are exposed to early childhood experiences, particularly kindergarten. Still, in the areas of Head Start and Summer School, more poor children experience the programs than the non-poor. The following tabulation shows the differences by economic status.

Early Childhood Programs	Percentage Receiving Early Childhood Educational Experiences: Poor/AFDC	Non-Poor
Kindergarten	74	87
Nursery School or Day Care	7	12
Pre-School	5	9
Head Start	14	5
Summer School (Pre-Primary)	8	4
Early Childhood Exposure (One or more of the above)	81	90

The lack of early childhood experiences is associated with low achievement, particularly for the poor, as reflected in the tabulations below. The pattern for math is virtually identical to that presented for reading.

Economic Status and Achievement	Early Childhood Educational Exposure: Yes (%)	No (%)
Poor/AFDC Reading Achievement		
Bottom Quarter	40	51
Second Quarter	31	32
Third Quarter	19	11
Top Quarter	10	5
Total	100	99
Non-Poor Reading Achievement		
Bottom Quarter	19	29
Second Quarter	24	29
Third Quarter	28	24
Top Quarter	30	18
Total	101	100

Students who do not experience early childhood educational programs are more likely than those who do experience these programs to be selected for Title I, as shown in the following tabulations. (Percentages are not directly combinable due to dual classification.)

Economic Status and Early Childhood Educational Exposure	Percentage Selected for Title I	
	Reading	Math
Poor/AFDC		
Experienced Early Childhood Educational Programs	24	15
Did Not Experience Early Childhood Educational Programs	34	21
Non-Poor		
Experienced Early Childhood Educational Programs	9	5
Did Not Experience Early Childhood Educational Programs	13	7

This description of the educational services received by the nation's elementary school children in terms of their family economic status give only a flavor of the results as reported in the complete text.

CHAPTER 1. POPULATION ESTIMATES AND SAMPLE PERCENTAGES OF SELECTED STUDENT CHARACTERISTICS

This third technical report from the Sustaining Effects Study extends the findings relating to student economic and educational status and selection for compensatory education (CE), as reported by Breglio, Hinckley and Beal (1978). It probes beyond simple CE selection rates to focus on reading and math CE selection rates separately, exposure to non-academic CE services, early childhood educational experiences, and the kinds of educational services actually received (number of hours of instruction by various types of teachers and sizes of instructional group, etc.) by students of various economic and educational backgrounds.

The sample of 15,579 public elementary school students in grades 1-6 reported upon was drawn in a stratified two-stage manner (schools, and students within schools) to ensure representation of many different kinds of schools and students. Student characteristics are weighted to approximate national characteristics. The complete sampling plan, how it was carried out for both the schools and students, and the various tests for bias, are reported upon in detail in other technical reports (Hoepfner, Zagorski, and Wellisch, 1977; and, Breglio, Hinckley and Beal, 1978).

In this technical report the questions addressed are:

- How do the measures of economic status and educational achievement differentiate between students *selected* and *not selected* for Title I and Other CE reading or math services? (Chapter 2)
- How are student economic status and student educational status associated with school attendance, hours of reading and math services *offered* a student during the year, and hours of reading and math instruction *attended* during the year? (Chapter 3)
- Are student economic status and student educational status associated with reading or math instructional settings in terms of the type of teacher or size of instructional group? (Chapter 4)
- Is student economic status associated with the kinds of early childhood educational services experienced? Is student economic status associated with the receipt of non-academic compensatory services? (Chapter 5)

One of the principal independent variables for this report, as for all those using Participation Study data, is student economic status. This variable was created from data collected early in 1977 in the Household Information Questionnaire (HIQ), which classifies children according to the Title I allocation criteria as identified in Section 103(c) of Title I of the Elementary and Secondary Education Act as amended. It includes, as current low income students, those from families below the poverty level, those from families whose income exceeds the current criteria of poverty (but who receive payments under the program of aid to families with dependent children (AFDC)), and those children living in institutions for neglected or delinquent children, or being supported in foster homes with public funds while attending public schools. As seen in Table 1-1, about 4.2 million students are classified as current low

Table 1-1

Estimated Population Numbers (In Thousands) and Percentages of Students Classified by the Title I Allocation Criteria

Economic Status	Projected Frequency†	Projected Percentage†
Poor/AFDC*	4,181	20.9
Non-Poor	15,825	79.1
Totals	20,006	100.0

*Poor/AFDC refers to those students who come from families whose economic conditions meet current low income status according to Title I allocation criteria. Poor/AFDC is used in most tables in this and other reports in reference to these current low income students.

†*Note of Reliability of the Data.* These figures are estimates derived from a sample of public school student households. They are subject to errors due to sampling variability, incorrect reporting and non-reporting of items. This note of caution pertains to all tables found in this report.

income (Poor/AFDC) students. This represents about 21 percent of the public elementary school children in grades 1-6. Non-poor students number 15.8 million, comprising 79 percent of the nation's elementary school children. Throughout this report, terms such as "poor students" and "needy students" will be used in reference to those who meet current low income status as determined by Title I allocation criteria. These terms are used for ease of expression, to avoid repeating such phrases as "students whose family economic status is poor" or "students who come from current low income families."

The first major dependent variables examined in this report are the selection for participation variables for reading and math CE programs. The variables are based on the Reading and Mathematics Compensatory Education Roster (CER), which is completed by local school coordinators for each student. Students were recorded as having been selected or not selected for reading and/or mathematics compensatory programs under the various funding sources -- Title I, Other Federal, State, District, and Private. This information yields the following CE selection categories: Title I only, Title I and Other CE, Other CE only, No CE at a School Receiving CE Funds, and No CE at a School Not Receiving CE Funds. These data were verified by checking information provided in principal and district questionnaires about the presence of various types of CE funds in the school or district.*

*Data in the second technical report did not have this verification procedure applied to them; as a result, some small differences exist between projections presented in Table 1-2 and those in Breglio, Hinckley and Beal (1978).

Table 1-2 presents the projected numbers and percentages of elementary school children in these various categories for both math and reading. Almost 13 percent of all children are identified as having been selected for Title I funded reading programs. More than 7 percent of all elementary school children have been selected for Title I math services. (About 5 percent of the children are selected for both reading and math programs; the total percentage of children served in one or the other or both programs is about 15.)

Almost 11 percent of the elementary school population has been selected for non-Title I funded CE reading services and another 10 percent for other funded math programs. Projecting these percentages to the national population indicates that approximately 24 percent of elementary school students are selected for reading CE and 17 percent are selected for math CE.

The five categories presented in Table 1-2 have been reduced to three categories for the remainder of this report. The first, Title I, refers to all students selected for Title I funded CE including those who are also selected for other funded CE (12.8 percent in reading and 7.2 percent in mathematics). The second, Other CE Only, is the same as in the five-way classification. The third category analyzed in the report is No CE selection and includes all students not selected for any CE regardless of whether they are in a school receiving CE funds.

A variable related to selection for CE is presented in Table 1-3. Here the estimated numbers and percentages of students rated by their teachers as needing CE services are provided. About 10 out of every 100 students have a need for reading services only. Only 3 in 100 have a need for math services only. About 20 out of every 100 elementary school students are judged needy in the areas of both reading and math. Hence, 30 in every 100 students are rated as needing CE services in reading, and 23 in 100 are rated as requiring compensatory services in math. (Whenever the term "need" or "needy" is used in this document it should be understood to mean *currently* in need.)

Table 1-2

Estimated Population Numbers (In Thousands) and Percentages of Students Selected for Participation in Reading and Math Compensatory Education Programs

CE Selection Status	Reading Programs		Math Programs	
	Projected Frequency	Projected Percentage	Projected Frequency	Projected Percentage
Title I CE Only	2,241	11.2	1,320	6.6
Title I and Other CE	320	1.6	120	0.6
Other CE Only	2,181	10.9	1,901	9.5
No CE at CE School	13,104	65.5	14,505	72.5
No CE at Non-CE School	2,160	10.8	2,160	10.8
TOTAL	20,006	100.0	20,006	100.0

Table 1-3

Estimated Numbers (In Thousands) and Percentages of Students Rated by Teacher as Needing Compensatory Education Services

Compensatory Services Needed	Projected Frequency	Projected Percentages
Reading Only	1,921	9.6
Math Only	580	2.9
Reading and Math	4,001	20.0
Neither	13,504	67.5
TOTAL	20,006	100.0

Tables 1-4 and 1-5 present the average amount of educational services received by the Participation Study sample. These data were obtained from the Student Participation and Attendance Record (SPAR), which provides the student's exposure to math and reading instructional time, instructor and group size. The SPARs were completed by math and reading teachers for each student in the sample. Table 1-4 overviews student attendance in terms of the average number of weeks present in school during the 1976-77 school year, and reading and math services in terms of the average hours attended per week, the total hours of each subject offered during 1976-77, and the total hours attended that year. These data are analyzed in Chapter 3.

Table 1-5 further segments the data on reading and math services received according to various types of instructors and size of instructional group. The greatest number of hours of reading instruction occurs independent of the teacher, and with non-programmed materials. Nearly 69 hours a year are spent by the average child in this kind of setting. The next significant segments of time spent in learning to read occur with a regular teacher in either a relatively small group of from 7-13 students (50 hours) or a large group of 21 or more students (44 hours).

The instructional pattern for math varies somewhat from that of reading. The most hours are spent under the instruction of a regular teacher in a large group setting (64 hours), followed by an independent, non-programmed setting (51 hours). The data indicate that more reading instruction occurs than math instruction. Learning activities independent of formal instruction occur frequently in both subjects. Reading tends to consume more hours in smaller group settings, whereas in math a high proportion of instruction occurs with a regular teacher in a large class.

The data in Tables 1-4 and 1-5 and in subsequent tables in this chapter are not presented as national projections of sample characteristics. However, the average hours of services offered and attended compare favorably with the national projections made by Zagorski, *et al.*, in *The Nature and Receipt of Compensatory Education*. In the absence of these more accurate projections the reader of this report may use the data reported here as a close approximation of the national projections of sample characteristics.

Table 1-4

Educational Services Received by Participation Study Sample, 1976–1977

Educational Service	Mean	Standard Deviation	N
Weeks Present in Year	**33.84**	**2.51**	**15,405**
Reading			
Average Hours Attended Per Week	6.66	2.76	15,368
Total Hours Offered Per Year	245.66	99.04	15,368
Total Hours Attended Per Year	232.37	94.77	15,368
Math			
Average Hours Attended Per Week	4.70	1.39	15,362
Total Hours Offered Per Year	174.62	48.27	15,362
Total Hours Attended Per Year	165.15	46.31	15,362

The data in Table 1-5 have been re-categorized in Table 1-6 in order to provide the basic dependent variables to be analyzed in Chapter 4. The first instructional setting focuses on type of teacher for both reading and math. The three types are: regular teacher, which provides the largest number of hours of instruction; non-regular teacher (special teacher, aide or tutor); and independent of teacher. The size of the instructional group cuts across teacher-type and is broken down into a large group of 14 or more students, a small group of 2 to 13 students and an individual instructional or learning setting.

Tables 1-7 and 1-8 present the data that are analyzed in Chapter 5. These data were provided by the Student Background Checklist (SBC) completed by each classroom teacher for students in the sample. In the first table the estimated percentages of students receiving compensatory guidance and counseling services (2.7%) and compensatory health and nutrition services (4.8%) are presented. For a small portion of the sample (3.4%) teachers were unable to provide information on student receipt of these services.

Table 1-8 presents the percentages of students experiencing various early childhood educational services. Each educational experience applies to a child's activities prior to grade one, and not to any activity after the child has entered the 1st grade. Again, there is the presence of a number of students in the sample for whom no information was available. Since both teachers and students move from school to school it is not unusual nor unexpected to find some teachers unable to provide specific historical information on some of their students. As it is, approximately 5 percent to 11 percent of the students sampled have been exposed to either summer school, Head Start, preschool, nursery, or day-care centers. At the other extreme, almost 85 percent of the elementary students sampled in the Participation Study have been to kindergarten or pre-kindergarten. Altogether, some 88 percent have had some sort of early childhood exposure to at least one of the educational settings described in the table.

Table 1-5

Educational Services Attended by Participation Study Sample by Type of Instructional Group, 1976–1977

Instructional Group	Hours of Services Attended: Reading Mean (N=15,368)	Reading Standard Deviation	Math Mean (N=15,362)	Math Standard Deviation
Regular Teacher				
21 Or More Students	43.55	60.99	64.15	54.21
14–20 Students	15.44	37.96	12.98	29.65
7–13 Students	49.61	63.96	13.00	30.46
2–6 Students	24.58	43.01	10.96	23.01
Special Teacher				
7 Or More Students	4.65	20.28	2.14	13.92
2–6 Students	5.96	20.61	1.72	10.39
Aide				
2–10 Students	7.12	20.34	3.53	11.63
Tutor	1.70	7.72	0.88	3.75
Independent of Teacher				
Programmed Materials	9.11	26.94	3.83	14.60
Non-Programmed Materials	68.81	53.59	50.62	36.36
TOTAL	232.37	94.77	165.15	46.31

Summary

The major independent variable for this report is family economic status defined in terms of the Title I allocation criteria for current low income families. Students are categorized as being from either current low income families (poor students, needy students, or Poor/AFDC) or not from low income families (non-poor students). This variable is frequently used in conjunction with other dependent variables, generally demographic in nature (race, grade, etc.).

The first major dependent variables are selection for reading CE and selection for math CE. A student is either selected for Title I reading (including those also selected for other funded reading CE), selected for other reading CE, or not selected for any reading CE. The same categories hold for math. These variables are analyzed in terms of family economic status and achievement.

Table 1-6

Educational Services Attended by the Participation Study Sample by Type of Teacher and Size of Instructional Groups, 1976–1977

Instructional Setting	Hours of Services Attended Per Year: Reading Mean (N=15,368)	Reading Standard Deviation	Math Mean (N=15,362)	Math Standard Deviation
Type of Teacher				
Regular Teacher	133.53	76.25	101.36	44.72
Non-Regular Teacher	19.48	37.07	8.31	22.38
Independent Of Teacher	77.99	56.91	54.49	37.93
Size of Instructional Group				
14 Or More Students	59.05	68.45	77.19	51.77
2–13 Students	92.16	77.31	31.48	44.48
Individual Instruction Or Learning	79.72	57.60	55.41	38.29

Table 1-7

Sample Percentages of Students Receiving Non-Academic Compensatory Services (N=15,579)

Compensatory Service	Receipt Status: Yes (%)	No (%)	No Record (%)	Totals (%)
Guidance and Counseling	2.7	93.9	3.4	100.0
Health and Nutrition	4.8	91.8	3.4	100.0

The achievement variables employed in the analysis are from the Comprehensive Test of Basic Skills (CTBS) for math concepts and computations, and for reading vocabulary and comprehension. Percentile scores developed especially for this study (the CTBS scaling methods and new conversions will be documented in a later report of this series) are used

Table 1-8

Sample Percentages of Student Early Childhood Experiences (N=15,579)

Early Childhood Programs*	Receipt Status: Yes (%)	No (%)	No Record (%)	Totals (%)
Summer School	5.1	87.3	7.6	100.0
Head Start	6.7	86.0	7.4	100.1
Preschool	8.3	83.8	7.9	100.0
Nursery/Day-Care Center	10.7	81.6	7.8	100.1
Kindergarten	84.5	13.2	2.3	100.0
Early Childhood Experience (Composite indicating exposure to at least one of the above programs)	88.2	9.7	2.1	100.0

*All Program Experiences are prior to grade one.

for both reading and math. Generally, the percentile distribution is divided into quarters or at the median to facilitate analysis.

The amount of educational services offered and attended are the next set of dependent variables examined. The analysis is concerned with the number of weeks of school attended a year, the hours of reading and math offered a year and the hours of reading and math attended a year. Further analysis focuses on the type and size of instructional group in which students participate. The independent variables for this analysis are family economic status, CE selection status, Achievement, Race, and Grade.

Finally, non-academic (guidance, counseling, health, and nutrition) CE services are analyzed as are early childhood educational experiences prior to grade one.

CHAPTER 2. FAMILY ECONOMIC STATUS, EDUCATIONAL STATUS, AND SELECTION FOR READING OR MATH CE

This chapter presents a detailed examination of the relationships among economic status and educational status as selection factors for reading or math CE programs. The basic patterns presented are similar to those reported by Breglio, Hinckley and Beal (1978). In that earlier report a combined achievement index (reading and math) and a combined selection status variable (reading CE and/or math CE) were used to examine associations among economic and educational factors and selection for CE. Here reading and math are examined separately.

ECONOMIC STATUS AND SELECTION FOR CE

Table 2-1 gives national estimates of the numbers and conditional proportions of poor and non-poor students who are selected for Title I and other CE reading and math programs. Over 1 million poor students (25 percent of all poor students) are selected for Title I reading. Over one-half million poor students, or 14 percent of all poor students are selected for other CE reading programs.

Seven hundred thousand poor students (16%) are selected for Title I math services. Another half-million (13%) are selected for math programs funded by non-Title I sources. Thus, many more poor children are served by Title I reading than by Title I math. This difference does not occur between Other CE reading and Other CE math.

Small proportions of students from non-poor families are served in Title I reading (9%) or math (5%) programs. However, the numbers of non-poor children served (1.5 million in reading and 760,000 in math) are greater than for the poor as a result of the much larger group of non-poor students.

More non-poor students are served by other CE reading and math than by Title I. Ten percent of the non-poor are selected for other CE reading and nearly as many (9%) are selected for non-Title I math programs.

EDUCATIONAL STATUS AND SELECTION FOR CE

Table 2-2 gives the estimated population percentages of students selected for reading or math CE by educational status. In both subjects, the lower the achievement level by quarter the greater the number and proportion of students selected for both Title I and other CE services. Over two million students whose achievement is below the median for reading are selected for Title I, and another one and a half million are assigned to CE reading funded by other sources.

Fewer than 400,000 students whose reading achievement places them above the national median are assigned to Title I. Nearly twice as many students who achieve at the same level are assigned to CE programs not funded by Title I.

Table 2-1

Estimated Population Percentages and Numbers (In Thousands)
of Student Reading or Math Compensatory Education
Selection Status by Family Economic Status

Subject and FES*	CE Selection Status: Title I/ Title I & Other CE	CE Selection Status: Other CE Only	CE Selection Status: No CE	Totals
Reading				
Poor/AFDC	25.4 (1,062)	13.7 (573)	60.9 (2,546)	100.0 (4,181)
Non-Poor	9.4 (1,487)	10.0 (1,583)	80.6 (12,755)	100.0 (15,825)
Math				
Poor/AFDC	16.0 (669)	12.7 (531)	71.3 (2,981)	100.0 (4,181)
Non-Poor	4.8 (760)	8.6 (1,361)	86.6 (13,704)	100.0 (15,825)

*Family Economic Status

The same is true of math programs. The conclusion is that Title I program selection appears to place greater emphasis on low achievement than does the selection process for non-Title I funded programs.

ECONOMIC STATUS AND EDUCATIONAL STATUS

Tables 2-3 and 2-4 confirm findings presented by Breglio, Hinckley and Beal (1978), namely: the condition of poverty is associated with low achievement. The X^2 values in the two tables are statistically very significant, indicating that there is a systematic relationship between economic status and reading and math achievement.

There is some indication that poor students perform better in math than reading. Thirty-one percent score above the median in math compared to only 27 percent in reading. The difference for the non-poor is much smaller, just less than one percentage point. This finding is reinforced by the knowledge that particular subgroups within the population score slightly better in math than reading. From *Participation Study* data, students from homes where English is not regularly spoken, students from large families, and minority students

Table 2-2

Estimated Population Percentages and Numbers (In Thousands)
of Student Reading or Math CE Selection Status
by Student Educational Status

Subject and Achievement	CE Selection Status: Title I Title I & Other	Other CE Only	No CE	Totals*
Reading				
Bottom Quarter	27.3 (1,327)	17.2 (836)	55.5 (2,698)	100.0 (4,861)
Second Quarter	16.7 (855)	12.3 (630)	71.0 (3,636)	100.0 (5,121)
Third Quarter	5.4 (274)	8.4 (427)	86.2 (4,382)	100.0 (5,083)
Top Quarter	2.2 (109)	5.3 (262)	92.5 (4,570)	100.0 (4,941)
Math				
Bottom Quarter	14.2 (683)	13.1 (630)	72.8 (3,508)	100.1 (4,821)
Second Quarter	9.4 (457)	10.4 (506)	80.2 (3,898)	100.0 (4,861)
Third Quarter	4.2 (219)	7.9 (413)	87.9 (4,590)	100.0 (5,222)
Top Quarter	1.5 (76)	6.6 (337)	91.9 (4,689).	100.0 (5,102)

*The conversion from raw scores to percentile scores for the CTBS was based on the complete SES representative sample of which the Participation Sample is a subset. The distribution by quarters for reading and math for the Participation Sample are not perfect but range between 24.3% and 25.6% for reading and 24.1% and 26.1% for math.

Table 2-3

Sample Percentages of Student Reading Achievement
by Family Economic Status
(N = 15,216)

	Reading Achievement				
Economic Status	Bottom Quarter	Second Quarter	Third Quarter	Top Quarter	Row Totals
Poor/AFDC	42.7 (1,350)	30.5 (964)	17.4 (551)	9.4 (299)	100.0 (3,164)
Non-Poor	19.5 (2,348)	24.4 (2,941)	27.4 (3,298)	28.7 (3,465)	100.0 (12,052)
Column Totals	24.3 (3,698)	25.7 (3,905)	25.3 (3,849)	24.7 (3,764)	100.0 (15,216)
$\chi^2 = 1066.207$	df = 3		$\rho < 0.0001$		

Table 2-4

Sample Percentages of Student Math Achievement
by Family Economic Status
(N = 15,198)

	Math Achievement				
Economic Status	Bottom Quarter	Second Quarter	Third Quarter	Top Quarter	Row Totals
Poor/AFDC	40.3 (1,273)	28.9 (913)	20.5 (647)	10.3 (324)	100.0 (3,157)
Non-Poor	19.9 (2,395)	23.1 (2,782)	27.6 (3,324)	29.4 (3,540)	100.0 (12,041)
Total Counts	24.1 (3,668)	24.3 (3,695)	26.1 (3,971)	25.4 (3,864)	99.9 (15,198)
$\chi^2 = 875.670$	df = 3		$\rho < 0.0001$		

score slightly better in math than reading. These are the groups of students more likely to be found in poverty.

Even though it appears that needy students perform better in math than reading there is more than a 40 percent chance that a student from a low income family will achieve below the 25th percentile in reading or math. This compares with just less than a 20 percent chance for those with better family economic conditions.

ECONOMIC STATUS, EDUCATIONAL STATUS, AND SELECTION FOR CE

Data for analysis of the way the combined economic and educational variables differentiate between students selected and not selected for reading or math CE are presented in Tables 2-5 and 2-6. Table 2-5 includes conditional estimates of the numbers and percentages of students, in grades one through six, selected for reading CE. The data indicate that selection rates for both the poor and non-poor proceeds in a fairly orderly fashion according to achievement. The percentage of poor Title I selectees in reading ranges from nearly 36 percent in the first quarter to 9 percent in the fourth quarter. The great majority of poor students selected for Title I reading (nearly one million students) are below the national median in reading achievement. Only one-tenth that many are above the median and receive services. The same pattern holds for poor students selected for other CE.

Among the non-poor, the pattern is similar, though the percentages are smaller in the case of Title I than was true for the poor. The concentration of non-poor students selected for Title I reading occurs among those achieving below the national median. Over one million non-poor, below-norm achievers are selected for Title I. Only about 270,000 non-poor students, whose achievement is above the national median, are selected for Title I. Hence, of the nearly 2.6 million Title I students in reading, 2.2 million are either poor, low achieving or both. Of those students served, Title I reading is reaching the intended student groups. While CE reading programs funded by other sources follow the same general pattern, they do not distinguish as clearly between needy and low achieving student groups. For instance, of the nearly 2.2 million served by Other CE, only 1.5 million are either poor, low achieving or both. This represents 68 percent of the total served compared to the 86 percent that are from these two groups under Title I.

Consistent with data interpreted earlier, the same pattern that exists for reading holds for math. The basic difference is that fewer students in all groups are selected for math CE.

Figures 2-1 and 2-2 display the percentages of students selected for Title I reading and Title I math by economic status and educational achievement, in deciles. The largest concentration of poor students selected occurs in the first two deciles. The percentage selected then gradually decreases until the achievement median is reached. At this point the percentage of selected poor is equal to the highest percentage of selected non-poor at any decile. The drop-off is most severe for the poor between the median and the 70th percentile. However, it then rises and reaches a plateau over the remaining decile increments. For the non-poor, initial selection percentages for the low deciles stay constant through the 30th percentile and then steadily drop off, approaching zero as achievement approaches the upper limit.

This identified pattern holds for the math programs, although the degree of change in percent selected from the lower deciles to the upper deciles is not nearly so great. Again, there

Table 2-5

Estimated Population Percentages and Numbers (In Thousands) of Student Reading CE Selection Status by Family Economic Status and Reading Achievement

Economic Status And Reading Achievement	Reading CE Selection Status: Title I/ Title I & Other CE	Other CE Only	No CE	TOTALS (Thousands)
POOR/AFDC				
Reading Achievement				
First Quarter	35.5 (635)	17.3 (310)	47.1 (841)	99.9 (1,786)
Second Quarter	25.8 (329)	12.6 (161)	61.6 (785)	100.0 (1,275)
Third Quarter	9.0 (65)	9.7 (71)	81.3 (592)	100.0 (728)
Fourth Quarter	9.0 (35)	6.9 (27)	84.1 (330)	100.0 (392)
NON-POOR				
Reading Achievement				
First Quarter	22.6 (697)	17.0 (525)	60.4 (1,864)	100.0 (3,086)
Second Quarter	13.7 (529)	12.2 (471)	74.1 (2,860)	100.0 (3,860)
Third Quarter	4.6 (199)	8.2 (356)	87.2 (3,782)	100.0 (4,337)
Fourth Quarter	1.5 (69)	4.9 (224)	93.5 (4,249)	99.9 (4,542)
Total Counts* (Thousands)	2,558	2,145	15,303	20,006

*The slight differences from the frequencies listed previously for Reading CE Selection Status are due to rounding errors.

Table 2-6

Estimated Population Percentages and Numbers (In Thousands)
of Student Math CE Selection Status by Family
Economic Status and Math Achievement

Economic Status And Math Achievement	Math CE Selection Status: Title I/ Title I & Other CE	Math CE Selection Status: Other CE Only	Math CE Selection Status: No CE	TOTALS (Thousands)
POOR/AFDC				
Math Achievement				
First Quarter	22.0 (371)	14.6 (246)	63.4 (1,068)	100.0 (1685)
Second Quarter	16.7 (202)	12.9 (156)	70.4 (850)	100.0 (1208)
Third Quarter	8.5 (73)	10.4 (89)	81.1 (695)	100.0 (857)
Fourth Quarter	6.4 (27)	7.1 (31)	86.5 (373)	100.0 (431)
NON-POOR				
Math Achievement				
First Quarter	10.1 (318)	12.3 (387)	77.6 (2,444)	100.0 (3149)
Second Quarter	7.0 (256)	9.5 (347)	83.5 (3,053)	100.0 (3656)
Third Quarter	3.2 (140)	7.4 (323)	89.4 (3,905)	100.0 (4368)
Fourth Quarter	1.1 (51)	6.4 (298)	92.5 (4,303)	100.0 (4652)
Total Counts* (Thousands)	1,438	1,877	16,691	20,006

*The slight differences from the frequencies listed previously for Math CE Selection Status are due to rounding errors.

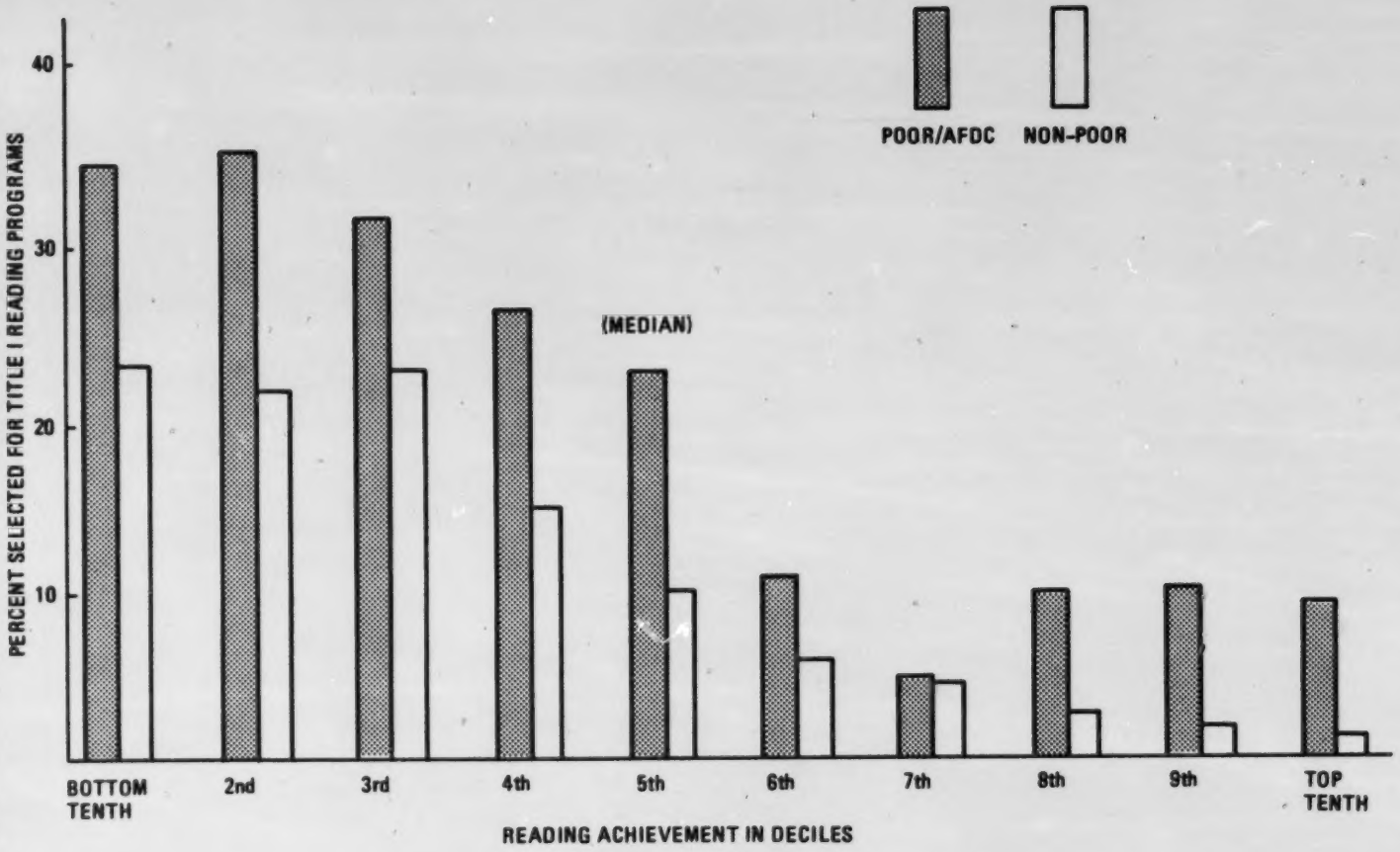

Figure 2-1

Percentages of Students Selected for Title I Reading Programs by Economic Status and Reading Achievement

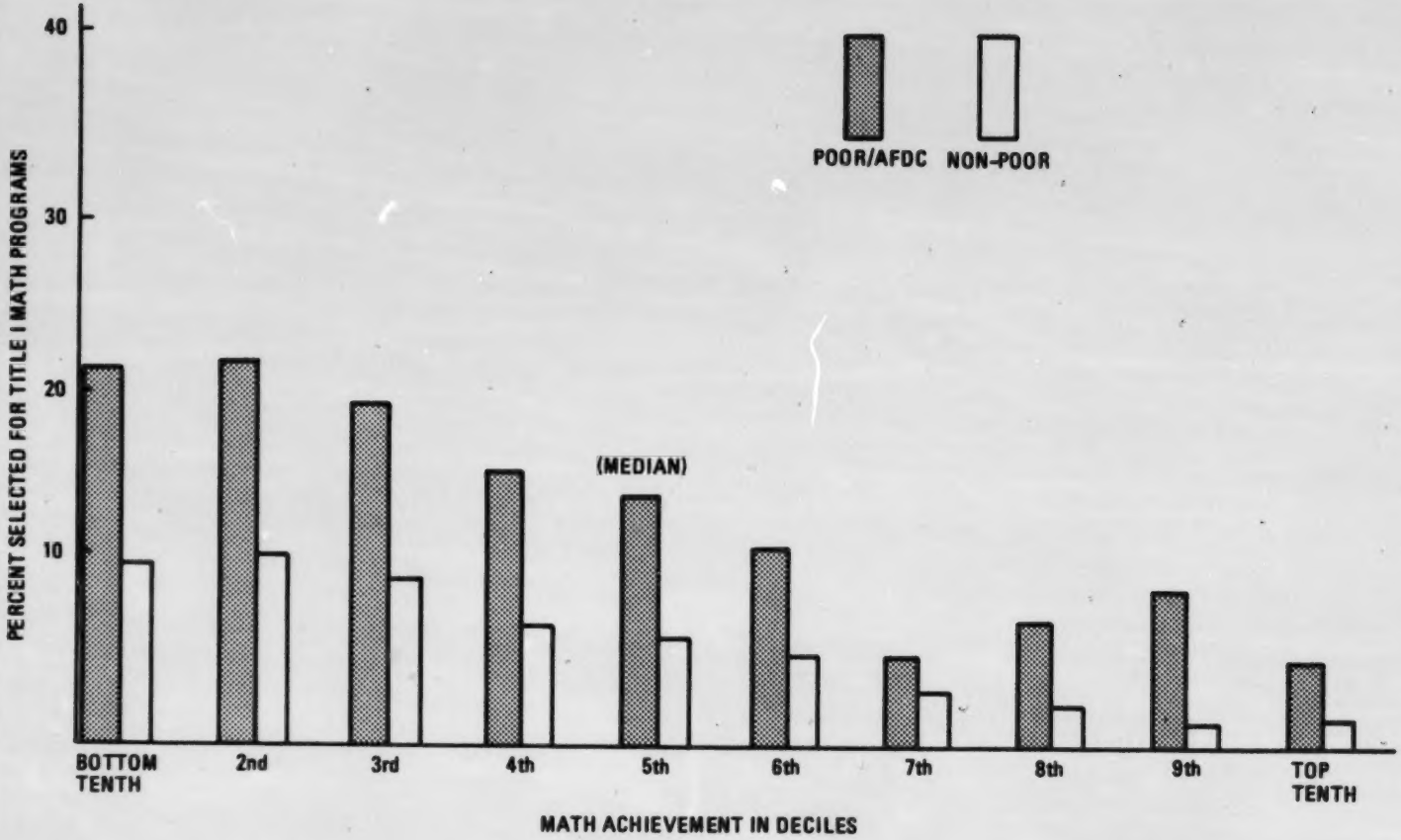

Figure 2-2

Percentages of Students Selected for Title I Math Programs
by Economic Status and Math Achievement

is an increase among poor selectees after the 70th percentile is reached. This may merely be a consequence of the small number of poor students that have these high achievement levels. For the non-poor, selection rates again approach zero as achievement increases.

Tables 2-7 and 2-8 present data describing students in Title I schools only. Both tables indicate that the selection pattern in Title I schools is similar to the pattern for all schools. Those who are both economically needy and low achieving have the greatest proportion selected for Title I and Other CE; the next largest percentages selected come from the low achieving but not needy, and the smallest percents are from the needy but not low achieving, followed by the non-needy and non-low achieving.

TEACHER JUDGMENT OF CE NEED AND SELECTION FOR CE

The next set of four tables introduces a new variable into the analysis of CE selection. Here teacher judgment is taken into account. In Table 2-9 teacher judgment of the need for reading and/or math CE is presented with the economic status variable. Among the poor, 40 percent are indicated as needing reading *and* math services, and another 16 percent as needing either reading or math.

For the non-poor about 24 percent are judged as needing compensatory reading services. Seventeen percent of the non-poor are believed by their teachers to need math assistance.

When achievement is introduced into the analysis, as it is in Table 2-10, it becomes clear that for both the poor and the non-poor, and for both reading and math, that teachers identify the lowest achievers as most in need of compensatory services. Among the poor low achievers in both subjects, over half are judged needing help, but for the non-poor low achievers the percentage drops to 45 percent in reading and to only 34 percent in math. Teacher judgment does not seem to be as accurate among the non-poor as the poor.

In general, students who are not judged as needing CE services, whether poor or non-poor, are not selected for such services when compared to those who are judged needy (see Table 2-11). Forty-three percent of the poor judged as needing reading help have been selected for Title I and another 18 percent for Other CE. Only 6 percent and 9 percent respectively of those judged as not needy are so selected.

Among the non-poor the same pattern emerges. However, a greater proportion of non-poor, judged as needing reading or math services, receive Other CE services than of poor.

Table 2-12 takes the analysis one step further. It basically indicates that the student who is poor, achieving below the national median, and judged needy will have the greatest chance of being selected for Title I programs and all CE combined. This adds another dimension to the pattern outlined throughout this chapter where services go first to the poor and low achieving, then to non-poor low achieving, then to the economically needy and finally to those who are neither low achievers nor economically needy. For each of these cases it is clear that a distinguishing feature is whether or not a student is judged to be in need of the services. The student judged by the teachers as needing the services is more likely to be

Table 2-7

Sample Percentages of Student Reading CE Selection Status
by Family Economic Status and Reading Achievement
in Schools Receiving Title I Funds

Economic Status	Reading CE Selection Status: Title I (%)	Other CE (%)	No CE (%)	TOTALS (%)
Poor/AFDC Reading Achievement				
Bottom Quarter	44.0	14.3	41.7	100.0
Second Quarter	30.9	12.0	57.2	100.1
Third Quarter	11.4	10.2	78.4	100.0
Top Quarter	12.0	6.9	81.1	100.0
Non-Poor Reading Achievement				
Bottom Quarter	33.4	14.5	52.1	100.0
Second Quarter	21.6	11.9	66.5	100.0
Third Quarter	7.5	10.0	82.4	99.9
Fourth Quarter	2.9	6.7	90.5	100.1

Table 2-8

Sample Percentages of Student Math CE Selection Status
by Family Economic Status and Math Achievement
in Schools Receiving Title I Funds

Economic Status	Math CE Selection Status: Title I (%)	Other CE (%)	No CE (%)	TOTALS (%)
Poor/AFDC Math Achievement				
Bottom Quarter	26.8	13.0	60.2	100.0
Second Quarter	20.0	12.5	67.4	99.9
Third Quarter	11.1	10.5	78.5	100.1
Top Quarter	8.5	6.8	84.7	100.0
Non-Poor Math Achievement				
Bottom Quarter	15.3	12.4	72.3	100.0
Second Quarter	11.0	11.2	77.8	100.0
Third Quarter	5.3	9.4	85.3	100.0
Top Quarter	2.0	8.5	89.5	100.0

Table 2-9

Sample Percentages of Teacher Judgment of Student CE Need
by Family Economic Status (N=15,193)

Economic Status	Teacher Judgment of CE Need: Reading Only	Math Only	Reading & Math	No CE Need	Row Totals
Poor/AFDC	12.2 (384)	3.5 (111)	40.1 (1,269)	44.2 (1,399)	100.0 (3,163)
Non-Poor	8.9 (1,068)	2.7 (332)	14.7 (1,766)	73.7 (8,874)	100.0 (12,030)
Column Totals	9.6 (1,452)	2.9 (433)	20.0 (3,035)	67.6 (10,273)	100.1 (15,193)
	$\chi^2 = 1169.95$		df = 3	$\rho < .001$	

selected for services than one judged not needy, even though both may be members of the same economic and educational status cohort.

TITLE I SELECTEES ACHIEVING ABOVE THE NATIONAL MEDIAN

Table 2-13 presents data that permit the analysis of those students who achieve above the national median in reading or math, who come from families not meeting current low income criteria, and who have been selected for reading or math programs funded by Title I. About 10 percent of all Title I selectees for reading and 13 percent for math meet the above stated conditions.

Five subgroups contribute significantly to Title I selectees for reading who achieve above the national median and come from homes not counted under Title I allocation criteria. The subgroups which contribute disproportionately to the pool of seemingly misclassified students are: Midwestern states, rural areas, the first grade, whites, and those judged as needing reading CE by their teachers. The same pattern holds for math with the exception that students from small cities also make up a disproportionately large segment of the non-poor, high-achieving selectees, and there is no significant relationship among 1st graders.

Explanations are possible for some of these differences. Data presented by Breglio, Hinckley and Beal (1978) indicate that achievement is highest in the Midwest. Therefore, students in schools receiving Title I funds could be achieving above the national median but "below average" in their particular school. This is the guideline given in Title I regulations for identifying students who should participate in the programs. The same is true for white students. Their median score is above that for all students and it is possible for some white students to be achieving above the national median in reading or math, but fall below the average achievement for their particular school. Also, teachers may judge need according to some

Table 2-10

Estimated Population Percentages and Numbers (In Thousands) of Students Judged Needing Reading or Math CE Services by Family Economic Status and Student Achievement Level

Economic Status And Achievement Level	Teacher Judgment of CE Needs: Judged Needy (%)	Judged Not Needy (%)	TOTALS
Poor/AFDC			
Reading Achievement			
Bottom Half	64.3	35.7	100.0 (3,061)
Top Half	19.6	80.4	100.0 (1,120)
Non-Poor			
Reading Achievement			
Bottom Half	44.8	55.2	100.0 (6,946)
Top Half	7.0	93.0	100.0 (8,879)
Poor/AFDC			
Math Achievement			
Bottom Half	54.2	45.8	100.0 (2,893)
Top Half	19.3	80.7	100.0 (1,288)
Non-Poor			
Math Achievement			
Bottom Half	33.5	66.5	100.0 (6,805)
Top Half	5.3	94.7	100.0 (9,020)

Table 2-11

Estimated Population Percentages and Numbers (In Thousands) of Students Selected for CE by Family Economic Status and Teacher Judgment of CE Need

Economic Status and Teacher Judgment of CE Need	CE Selection Status: Title I/ Title I & Other CE	Other CE Only	No CE	TOTALS
Poor/AFDC				
Need Reading CE	43.0 (939)	18.3 (400)	38.8 (848)	100.1 (2,187)
Do Not Need Reading CE	6.3 (126)	8.7 (173)	84.9 (1,692)	99.9 (1,994)
Non-Poor				
Need Reading CE	32.5 (1,209)	21.7 (807)	45.8 (1,703)	100.0 (3,719)
Do Not Need Reading CE	2.3 (278)	6.4 (775)	91.3 (11,053)	100.0 (12,106)
Poor/AFDC				
Need Math CE	28.9 (527)	17.6 (321)	53.5 (975)	100.0 (1,823)
Do Not Need Math CE	6.0 (141)	8.9 (210)	85.1 (2,007)	100.0 (2,358)
Non-Poor				
Need Math CE	19.4 (531)	19.1 (523)	61.5 (1,684)	100.0 (2,738)
Do Not Need Math CE	1.8 (231)	6.4 (834)	91.9 (12,022)	100.1 (13,087)

Table 2-12

Sample Percentages of Student Reading or Math CE Selection Status by Family Economic Status, Student Achievement Level, and Teacher Judgment of Reading or Math CE Need

Economic Status, Educational Status, and Teacher Judgment of CE Need	CE Selection Status				Sample N
	Title I	Other CE	No CE	TOTALS	
Poor/AFDC Reading Bottom Half					
Judged Needing Reading CE	44	19	37	100	(1,471)
Judged Not Needing Reading CE	9	10	81	100	(819)
Non-Poor Reading Bottom Half					
Judged Needing Reading CE	34	22	44	100	(2,354)
Judged Not Needing Reading CE	5	8	88	101	(2,905)
Poor/AFDC Reading Top Half					
Judged Needing Reading CE	35	15	50	100	(165)
Judged Not Needing Reading CE	3	7	90	100	(680)
Non-Poor Reading Top Half					
Judged Needing Reading CE	25	18	56	99	(473)
Judged Not Needing Reading CE	1	6	93	100	(6,268)
Poor/AFDC Math Bottom Half					
Judged Needing Math CE	30	17	53	100	(1,173)
Judged Not Needing Math CE	8	10	82	100	(992)
Non-Poor Math Bottom Half					
Judged Needing Math CE	20	18	62	100	(1,720)
Judged Not Needing Math CE	3	7	90	100	(3,425)
Poor/AFDC Math Top Half					
Judged Needing Math CE	26	20	54	100	(187)
Judged Not Needing Math CE	3	7	90	100	(780)
Non-Poor Math Top Half					
Judged Needing Math CE	19	25	57	101	(362)
Judged Not Needing Math CE	1	6	93	100	(6,483)

Table 2-13

Title I Selectees Who Achieve Above the National Median and Come From Families Who Do Not Meet the Title I Allocation Criteria

(Read Down to Sum, Across to Compare)

	Reading Selectees Above Median and Title I Allocation Criteria	All Title I Reading Selectees	Math Selectees Above Median and Title I Allocation Criteria	All Title I Math Selectees
N	**204**	**1993**	**145**	**1132**
Percent of All Selectees	**10.2**	**100.0**	**12.8**	**100.0**
Geographic Region	(%)	(%)	(%)	(%)
Northeast	19.6	18.9	2.9	2.9
Mid-Atlantic	11.6	9.2	9.9	5.2
South	16.7*	34.7	15.8	9.7
Midwest	43.6*	24.9	48.1*	21.7
West	8.5	12.3	23.3	25.9
Urbanism				
Large City	8.3*	21.3	17.0*	37.8
Medium City	3.5	5.9	4.5	5.3
Small City	34.4	31.9	30.1*	20.2
Suburb	6.8	6.3	6.4	6.6
Rural	47.0*	34.6	42.0*	30.0
Grade				
First	26.9*	16.3	17.3	14.0
Second	17.6	20.0	20.2	17.5
Third	17.5	19.2	13.3	18.4
Fourth	17.4	17.8	24.4	19.9
Fifth	12.6	14.9	15.9	16.2
Sixth	8.1	11.8	8.9	14.0
Sex of Student				
Female	41.1	42.8	45.8	46.0
Male	58.9	57.2	54.2	54.0
Race/Ethnicity				
White	87.1*	64.0	73.0*	46.7
Black	8.9*	24.7	17.2*	36.6
Hispanics	2.4*	9.2	8.3	14.2
Other	1.6	2.1	1.5	2.4
Teachers Judgment of CE Need				
Need CE	58.8*	83.6	46.7*	73.5
Not Need CE	41.2*	16.4	53.3*	26.5

*Significant at the 0.05 level.

local achievement criterion, permitted under Title I regulations, which allows those who score above the national median measured by the CTBS to participate in the program.

For reading, the disproportionate contribution of 1st graders to this group could be attributed to the difficulty that exists in pinpointing reading capabilities in the first year of school. Once students have been in school a year there is no disproportionate contribution by grade. On the cause of geographic distribution, rural schools tend to be small and it is possible that all students in such schools are designated for Title I CE because it is the most efficient means to administer the program. Hence, relatively high achievers become counted as selectees.

Finally, it is possible that many of these students come from homes where income borders on poverty. While not technically used as a criterion for inclusion in a Title I program, poverty is a fundamental criterion for funds allocation. Some teachers may assign according to economic need as much as low achievement. The data in Table 2-14 provide information on Title I selectees who achieve above the national median and come from families whose income exceeds 200 percent of the appropriate Orshansky poverty threshold. Moving the poverty thresholds to this high level eliminates about 40 percent of the number which appears to be miscast in our analysis. It also reveals the same pattern of subgroup contribution to the whole.

There are some exceptions, the basic one being that first graders no longer stand out among reading selectees. However, the fourth grade emerges as contributing a large number of students to this group. The decrease in the contribution of the first grades might indicate that many of those singled out in Table 2-13 come from families whose income is small and they are expected to be low achieving, while in reality they are not. The emergence of fourth graders appears to be a random happening with no plausible explanation readily emerging.

SUMMARY

Children who are economically needy are selected on a proportional basis for CE, particularly Title I, more frequently than those who are not economically needy. Students in the lower achievement groupings are more likely than students in the higher groupings to be selected for reading or math CE. Inasmuch as economic status is related to achievement, the combined effects of poverty and low achievement increase the rate of selection for CE, particularly for Title I CE. Finally, teacher judgment plays an important role in selection for CE, regardless of the economic or achievement category; those judged needy are more likely to be selected for CE than those judged as not needy. Many of those Title I selectees whose high achievement on the national scales seems to make them unlikely CE participants are from subgroups where Title I regulations would still permit them to be included in the programs.

Table 2-14

Title I Selectees Who Achieve Above the National Median and Come From Families Whose Income Exceeds 200% of the 1976 Orshansky Index

(Read Down to Sum, Across to Compare)

	Reading Selectees Above Median and 200% Orshansky	All Title I Reading Selectees	Math Selectees Above Median and 200% Orshansky	All Title I Math Selectees
N	**127**	**1993**	**102**	**1132**
Percent of All Selectees	**6.4**	**100.0**	**9.0**	**100.0**
Geographic Region	(%)	(%)	(%)	(%)
Northeast	20.1	18.9	3.3	2.9
Mid-Atlantic	13.3	9.2	10.5	5.2
South	12.7*	34.7	13.6	9.7
Midwest	43.4*	24.9	55.1*	21.7
West	10.5	12.3	17.4*	25.9
Urbanism				
Large City	5.8*	21.3	11.3*	37.8
Medium City	2.3	5.9	2.8	5.3
Small City	34.8	31.9	33.0*	20.2
Suburb	10.3	6.3	9.6	6.6
Rural	46.7*	34.6	43.3*	30.0
Grade				
First	18.5	16.3	15.3	14.0
Second	15.3	20.0	15.2	17.5
Third	14.4	19.2	15.4	18.4
Fourth	25.9*	17.8	27.0	19.9
Fifth	18.0	14.9	17.9	16.2
Sixth	7.9	11.8	9.2	14.0
Sex of Students				
Female	43.8	42.8	39.5	46.0
Male	56.2	57.2	60.5	54.0
Race/Ethnicity				
White	90.8*	64.0	79.7*	46.7
Black	5.4*	24.7	14.6*	36.6
Hispanic	2.5*	9.2	4.1*	14.2
Other	1.3	2.1	1.6	2.4

*Significant at the 0.05 level.

CHAPTER 3. READING AND MATH SERVICES: OFFERED AND ATTENDED

In this chapter five items are discussed providing insights into the general services offered to and received by elementary school children. The first item analyzed is the number of weeks students attended school in the 1976-77 academic year. Then the total hours of reading and math offered to students are reviewed. Finally, the total hours of reading and math actually attended (received) during the year are presented. These five items are described in terms of a student's family economic status, reading or math achievement, selection for reading or math CE, race and grade. Tables and figures are presented giving the average amount of time (weeks or hours) for each of the dependent variables by various interactions of the independent variables. Also, analysis-of-variance summary tables were used in the analysis, and these tables are presented in Appendix A in order to provide some insight into the effects each of the independent variables has on the dependent variables.

ATTENDANCE

The number of weeks of school attended in the 1976-77 school year is analyzed by family economic status, reading or math achievement, and selection for reading or math CE services in Tables 3-1 and 3-2. Students from households counted as current low income under the Title 1 allocation criteria attend, on the average, 33 weeks of school. Students from non-poor families average about 34 weeks of attendance. Since total attendance is a product of absenteeism rates and the number of weeks a school is open during the year, it is difficult to pinpoint the exact cause of this difference in attendance. Yet, one thing is clear, attendance is related to poverty. Children from poor families simply attend fewer days of school a year than those from non-poor families.

Both reading and math achievements are related to the quantity of schooling students receive. Students in the top achievement quarter attend about one more week of school than students in the bottom quarter. Overall there is a gradual increase in attendance as one moves from the bottom quarter to the top quarter. This relationship holds when family economic status and CE selection status are controlled for.

Among CE selectees, Title I students attend less school than students in other CE programs. Students not selected for CE have the highest average attendance.

The interactions of family economic status and achievement, and family economic status and CE selection, are significant for both reading and math. Regardless of achievement or CE selection, poor students attend less school on the average than non-poor students.

Two new variables are introduced in Table 3-3 to interact with family economic status in describing attendance. Family economic status is again the dominant variable. The interactions (see Figure 3-1) show that poor children attend less school than non-poor children in every grade and for each of the majority-minority racial groupings. Attendance for non-poor is lowest in the first two grades (between 33.8 and 34.0 weeks).

Table 3-1

Weeks of School Attended by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Weeks of School Attended	33.84	2.51	15,405*
Family Economic Status			
Poor/AFDC	33.05	3.18	3,117
Non-Poor	34.04	2.27	11,957
Reading Achievement			
Bottom Quarter	33.37	2.87	3,720
Second Quarter	33.74	2.54	3,957
Third Quarter	34.02	2.19	3,901
Top Quarter	34.26	2.13	3.819
Reading CE Selection Status			
Title I	33.22	2.99	1,982
Other CE Only	33.72	2.36	1,674
No CE	34.00	2.12	11,751
Family Economic Status and Reading Achievement			
Poor-AFDC			
Bottom Quarter	32.70	3.37	1,326
Second Quarter	33.24	3.07	954
Third Quarter	33.54	2.60	545
Top Quarter	33.54	2.82	292
Non-Poor			
Bottom Quarter	33.74	2.48	2,323
Second Quarter	33.90	2.34	2,911
Third Quarter	34.09	2.11	3,276
Top Quarter	34.32	2.05	3,449
Family Economic Status and Reading CE Selection Status			
Poor-AFDC			
Title I	32.39	3.49	806
Other CE Only	33.38	2.62	433
No CE	33.27	3.11	1,905
Non-Poor			
Title I	33.80	2.48	1,135
Other CE Only	33.83	2.28	1,198
No CE	34.09	2.24	9,649
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	33.07	3.12	1,021
Other CE Only	33.55	2.60	647
No CE	33.46	2.85	2,050
Second Quarter			
Title I	33.29	2.98	660
Other CE Only	33.90	2.07	488
No CE	33.81	2.53	2,787
Third Quarter			
Title I	33.72	2.16	210
Other CE Only	33.91	2.23	328
No CE	34.04	2.22	3,362
Top Quarter			
Title I	33.81	2.04	82
Other CE Only	33.59	2.50	200
No CE	34.30	2.13	3,533

*Subsample Ns in this and subsequent tables (through 4-25) do not sum to the sample N for the grand mean due to missing cases.

Table 3-2

Weeks of School Attended by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Weeks of School Attended	33.84	2.51	15,405
Family Economic Status			
Poor/AFDC	33.05	3.18	3,117
Non-Poor	34.04	2.27	11,957
Math Achievement			
Bottom Quarter	33.43	2.89	3,686
Second Quarter	33.70	2.44	3,737
Third Quarter	33.94	2.33	4,011
Top Quarter	34.31	2.06	3,931
Math CE Selection Status			
Title I	33.14	2.72	1,107
Other CE Only	33.52	2.35	1,466
No CE	33.98	2.18	12,832
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	32.87	3.41	1,251
Second Quarter	33.13	2.88	906
Third Quarter	33.18	2.99	636
Top Quarter	33.67	2.63	321
Non-Poor			
Bottom Quarter	33.72	2.55	2,365
Second Quarter	33.88	2.26	2,755
Third Quarter	34.09	2.16	3,304
Top Quarter	34.35	2.00	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	32.60	3.08	509
Other CE Only	33.19	2.65	401
No CE	33.14	3.27	2,234
Non-Poor			
Title I	33.60	2.31	576
Other CE Only	33.63	2.24	1,030
No CE	34.10	2.27	10,377
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	33.03	2.87	520
Other CE Only	33.36	2.55	486
No CE	33.51	2.98	2,676
Second Quarter			
Title I	33.13	2.50	353
Other CE Only	33.53	2.30	392
No CE	33.79	2.47	2,991
Third Quarter			
Title I	33.40	2.44	170
Other CE Only	33.72	2.08	317
No CE	33.98	2.38	3,522
Top Quarter			
Title I	33.98	1.68	59
Other CE Only	33.71	2.19	255
No CE	34.35	2.08	3,614

Table 3-3

Weeks of School Attended by Family Economic Status, Race/Ethnicity, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Weeks of School Attended	33.84	2.51	15,405
Family Economic Status			
Poor/AFDC	33.05	3.18	3,117
Non-Poor	34.04	2.27	11,957
Race			
Majority	33.87	2.48	11,981
Minority	33.72	2.78	3,382
Grade			
First	33.45	2.57	2,802
Second	33.77	2.38	2,502
Third	33.93	2.47	2,539
Fourth	33.91	2.67	2,391
Fifth	34.11	2.33	2,365
Sixth	33.92	2.57	2,807
Family Economic Status and Race			
Poor/AFDC			
Majority	32.82	3.25	1,512
Minority	33.27	3.09	1,605
Non-Poor			
Majority	34.02	2.20	10,249
Minority	34.15	2.35	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	32.68	2.99	562
Second	32.98	2.94	506
Third	33.08	3.25	547
Fourth	33.16	3.46	541
Fifth	33.57	2.71	477
Sixth	32.92	3.52	501
Non-Poor			
First	33.76	2.40	2,197
Second	33.96	2.17	1,951
Third	34.17	2.15	1,939
Fourth	34.11	2.36	1,808
Fifth	34.23	2.21	1,844
Sixth	34.13	2.25	2,236
Race and Grade			
Majority			
First	33.87	2.43	11,981
Second	33.53	2.50	2,114
Third	33.88	2.53	1,968
Fourth	33.96	2.45	1,844
Fifth	34.07	2.44	1,826
Sixth	33.94	2.50	2,287
Minority			
First	33.18	2.78	676
Second	33.41	2.63	555
Third	34.07	2.25	562
Fourth	33.73	3.33	540
Fifth	34.23	2.60	537
Sixth	33.83	2.84	512

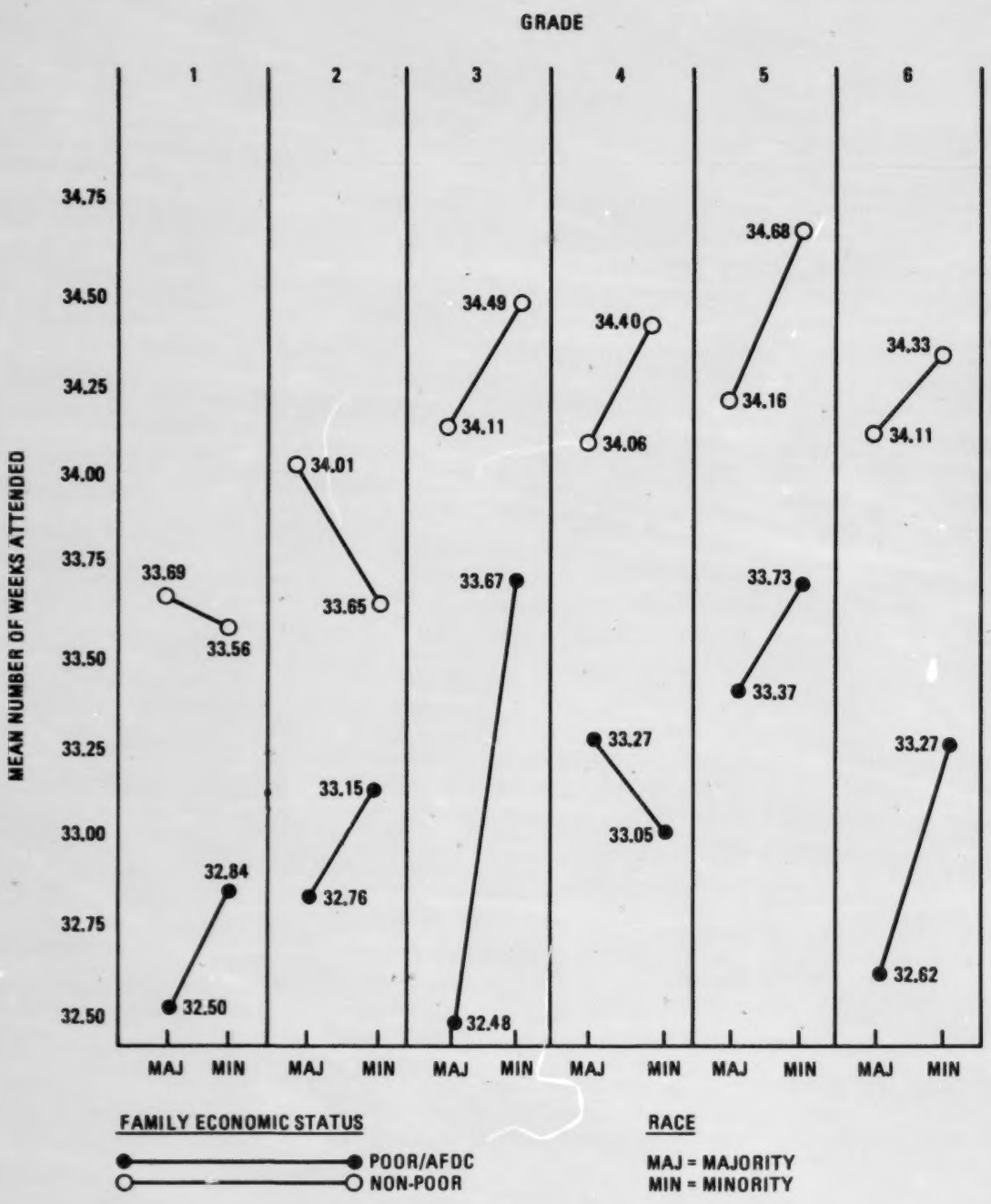

Figure 3-1

Interaction of Family Economic Status, and Race, by Grade, on Total Weeks of School Attended, 1976-77

The attendance of poor students fluctuates more than non-poor students by grade. Attendance is extremely low in grade one (less than 33 weeks), rises slightly in grades two through four, peaks in grade five and decreases in grade six. Also, in most cases for the poor, and in all but the first two grades for the non-poor, minority students attend more school than do majority students.

Table 3-4 presents a method of displaying the results of analysis-of-variance when the factors are attribute variables and are not experimentally manipulated – being, therefore, correlates.* The effects of family economic status, race, and grade on school attendance are shown. This analysis permits the net effect of each variable (the *Beta* value for independent variables, to be known when the differences in the other variables are controlled for. The data presented again indicate that family economic status is the dominant variable in these particular analyses of attendance. The difference between the deviations from the grand mean for the poor and the non-poor increases when the race and grade variables are controlled for. Also, the data in the table indicate that when family economic status and grade are controlled for there is a shift in the direction of the relationship between race and attendance. The adjusted deviation from the grand mean shows that minority students, when poverty and grade are controlled for, attend slightly more school than majority students. This does not run counter to Zagorski's et al. (1978) findings that minority students tend to miss, through absenteeism, more hours of instruction per year. Minority students tend to live in large urban centers where the academic year is longer than in the suburban and rural areas where most majority students live. Hence, minority students, having more days available to attend school, can miss more hours of instruction than majority students while still attending more days of school overall.

In Chapter 2 it was indicated that poverty is associated with low achievement. Compensatory education programs aimed at areas with high concentrations of low-income families, as in Title I, are attempts to produce school effects on achievement that would override the home effects of students from poor families. Data presented above indicate that the condition of poverty tends to militate against efforts to meet the special educational needs of low-achieving students.

Harnischfeger and Wiley (1975) state that the total quantity of schooling experienced by pupils is usually neglected in discussions of the determinants of educational achievement. They report that large variations in the degree of school exposure exists, as do large effects of exposure on achievement. It is conceivable, then, that one of the reasons students from low-income families achieve at a lower level than other students is that they are exposed to less schooling. The data just presented also call for that conclusion.

Data in Tables 3-1 and 3-2 suggest that the quantity of schooling received is an important intervening variable in the linkage of impoverished conditions to low achievement. Poor students who achieve above the national median in reading and math (quarters 3 and 4) attend more school throughout the year and have a smaller variance in attendance than poor children who achieve below the national median in these two subjects.

*Nie, N.H. et al., Statistical Package for the Social Sciences, 2nd., 1975.

Table 3-4

Multiple Classification Analysis of the Effects of Family Economic Status, Race, and Grade on Weeks of School Attended

Variables	Unadjusted Deviation From the Grand Mean	Eta*	Adjusted Deviation From the Grand Mean	Beta**	N
Grand Mean = 33.84					
Family Economic Status					
Poor/AFDC	-0.79	0.16	-0.86	0.17	3,117
Non-Poor	0.20		0.22		11,957
Race					
Majority	0.03	0.02	-0.06	0.04	11,760
Minority	-0.12		0.20		3,314
Grade					
First	-0.39		-0.38		2,748
Second	-0.07		-0.08		2,452
Third	0.09	0.08	0.11	0.08	2,481
Fourth	0.07		0.08		2,342
Fifth	0.27		0.26		2,319
Sixth	0.08		0.06		2,731

*Correlation ratio: This value squared explains the proportion of variance attributable to a given factor.

**Partial correlation ratio: Standardized partial regression coefficient.

Poor children who do not attend as much school as non-poor children are likely to receive less of the normal instructions that might improve their achievement levels. And they attend less school, so are more likely to be unavailable for the special programs of a compensatory nature designed to alleviate the effects of their poverty. This suggests that poverty has an intricate effect on achievement, and those policy makers who pursue efforts to compensate for the educational deprivation of poverty must bear in mind the complex way in which this factor influences learning.

TOTAL HOURS OF READING OFFERED

Table 3-5 presents data which indicate that family economic status, reading achievement, and selection for reading CE are all related to the amount of reading offered a student. Poor students are offered about 14 hours more reading instruction than non-poor students. As achievement level increases the hours of reading offered decreases from a high of 255 hours

Table 3-5

Hours of Reading Instruction Offered by Family Economic Status, Reading Achievement, and Selection for Reading CE (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction Offered	245.66	99.01	15.368
Family Economic Status			
Poor/AFDC	257.15	98.59	3,117
Non-Poor	243.06	99.08	11,956
Reading Achievement			
Bottom Quarter	255.50	96.25	3,718
Second Quarter	251.96	102.66	3,934
Third Quarter	238.67	98.02	3,901
Top Quarter	236.73	97.51	3,815
Reading CE Selection Status			
Title I	277.79	98.95	1,975
Other CE Only	254.64	91.64	1,671
No CE	238.93	98.67	11.749
Family Economic Status and Reading Achievement			
Poor-AFDC			
Bottom Quarter	259.47	96.31	1,326
Second Quarter	258.87	98.85	954
Third Quarter	253.19	102.16	546
Top Quarter	248.42	101.01	292
Non-Poor			
Bottom Quarter	253.37	96.40	2,323
Second-Quarter	250.09	103.71	2,910
Third Quarter	236.57	97.36	3,276
Top Quarter	236.35	97.50	3,450
Family Economic Status and Reading CE Selection Status			
Poor-AFDC			
Title I	287.38	100.43	801
Other CE Only	252.73	80.93	432
No CE	245.30	98.16	1,899
Non-Poor			
Title I	242.98	98.98	11,968
Other CE Only	255.23	95.23	1,195
No CE	238.10	98.86	9,641
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	253.89	91.49	1,021
Other CE Only	243.03	80.58	647
No CE	229.54	94.07	2,050
Second Quarter			
Title I	263.33	95.47	660
Other CE Only	243.91	96.71	488
No CE	230.96	98.02	2,786
Third Quarter			
Title I	267.83	101.12	210
Other CE Only	230.86	82.29	328
No CE	224.01	94.26	3,362
Top Quarter			
Title I	272.58	102.78	82
Other CE Only	228.96	94.25	200
No CE	224.81	93.52	3,533

to a low of 237 hours. Selection for reading CE is the principal variable, however, in accounting for hours of reading offered. Students selected for Title I are offered almost 280 hours of service, while those in Other CE programs have 255 hours of reading provided. Non-CE selectees have less than 240 hours of reading offered.

In the case of Title I selectees, poor students are offered considerably more hours of reading (287) than non-poor students (243). Poor and non-poor selectees for Other CE reading services are offered similar hours of service (253 hours and 255 hours), while poor children who are not selected for any CE are offered slightly more hours of service (245) than non-poor students who are not selected for CE services (238).

Overall, reading CE selection status accounts for most of the variance among these variables and the amount of reading offered. When it is controlled for in a multiple classification analysis the difference in deviation from the grand mean for poor and non-poor students is reduced from 14 hours to 6. The difference for each achievement quarter shows a similar reduction.

When race* and grade are considered along with family economic status (see Table 3-3 and Figure 3-1) each shows a difference by subgroup in the number of hours of reading offered, but it is the grade variable that is most strongly related to what is offered. For all students the number of hours offered decreases as grade increases.

Figure 3-2 graphs total hours offered to poor and non-poor students by race for each grade. In grades one and two there is little discernible difference between the poor and non-poor students in average reading hours offered. In the next four grades the two groups become more distinct. More hours of reading are offered to the poor than the non-poor.

In grades one and two, whites, whether poor or non-poor, are offered more hours than members of the minority groups. Grade three appears to be a transition grade where not only the poor and non-poor begin to separate but where minority students begin to be offered more hours of reading than white students. In grades four through six, both poor and non-poor minorities are offered more hours of reading than whites. Multiple classification analysis reveals that the gap between majority and minority students narrows considerably when poverty and grade are controlled for. The overall difference is closer to 3 hours than 12 hours in those conditions.

TOTAL HOURS OF MATH OFFERED

The pattern for the total number of hours of math offered to students during the year differs slightly from that for reading. Again, all three independent variables in Table 3-7 show subgroup differences. But poverty and the amount of math offered show a stronger relationship than do poverty and amount of reading. When CE selection status is controlled for in a multiple classification analysis, the adjusted difference between poor and non-poor deviations from the grand mean is more than 10 hours. This difference from reading may be related to the higher correlation between family economic status and reading than between family economic status and math (see Chapter 2).

*For tabled representational ease, race/ethnicity is here simplified as 'race'.

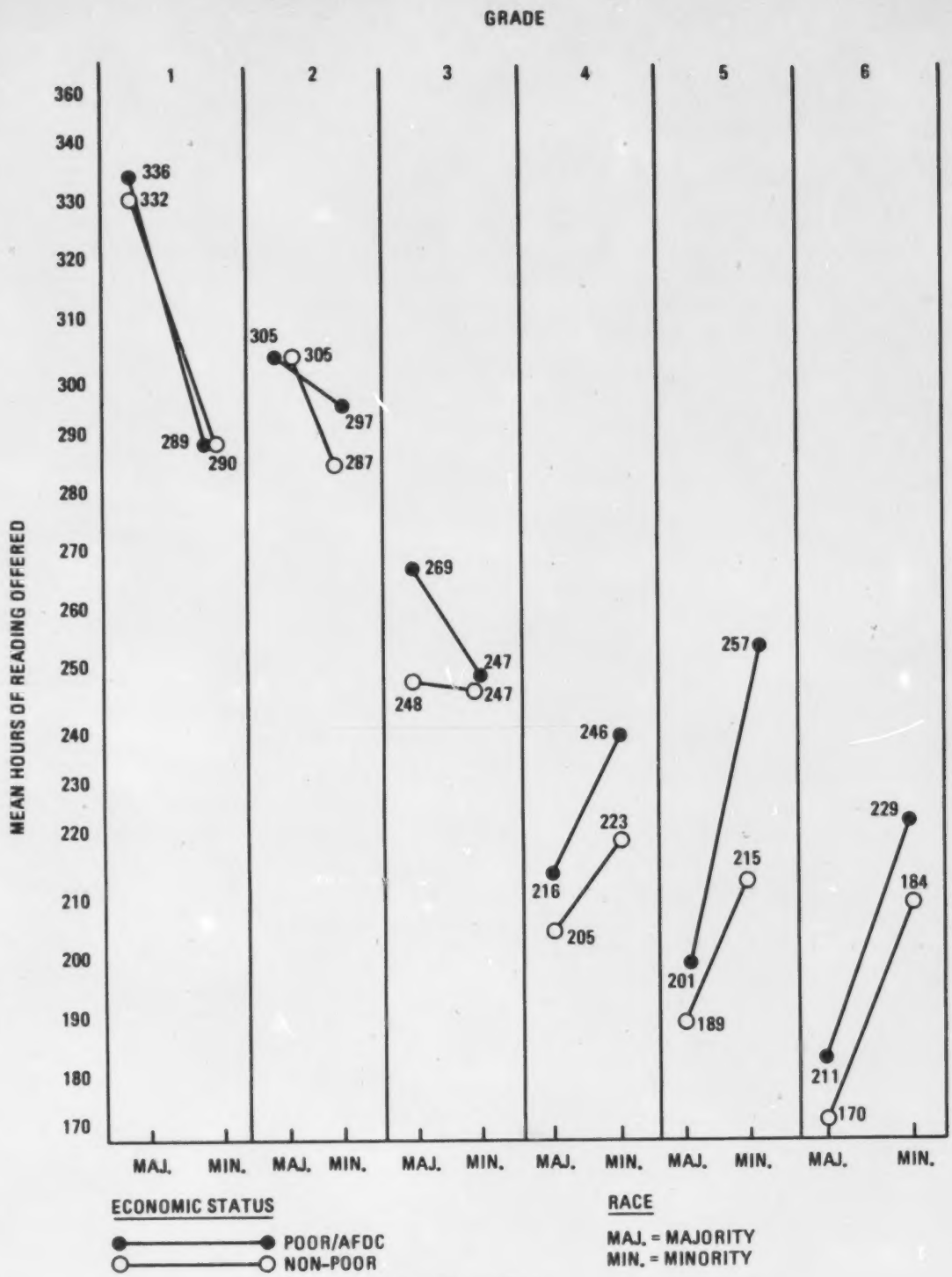

Figure 3-2

Interaction of Poverty and Race by Grade on
Total Hours of Reading Offered, 1976-77

Table 3-6

Hours of Reading Instruction Offered by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction Offered	245.66	99.01	15,368
Family Economic Status			
Poor/AFDC	257.15	98.59	3,117
Non-Poor	243.06	98.08	11,956
Race			
Majority	243.03	99.61	11,981
Minority	255.21	96.18	3,396
Grade			
First	322.14	103.21	2,790
Second	301.95	100.48	2,496
Third	250.21	87.18	2,529
Fourth	212.78	67.58	2,384
Fifth	200.82	63.40	2,363
Sixth	180.61	65.93	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	251.78	98.94	1,512
Minority	262.08	97.42	1,605
Non-Poor			
Majority	242.11	99.77	10.247
Minority	248.06	93.79	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	311.29	102.76	562
Second	300.12	93.52	506
Third	258.06	93.36	547
Fourth	230.63	83.22	541
Fifth	230.82	88.96	477
Sixth	205.24	76.77	501
Non-Poor			
First	325.34	103.13	2,197
Second	302.35	102.20	1,951
Third	247.99	85.62	1,938
Fourth	207.73	61.41	1,808
Fifth	193.27	52.18	1,844
Sixth	175.32	62.17	2,236
Race and Grade			
Majority			
First	332.76	101.70	2,114
Second	304.77	100.58	1,942
Third	250.72	86.04	1,962
Fourth	206.57	60.81	1,844
Fifth	190.72	49.02	1,826
Sixth	171.98	58.90	2,287
Minority			
First	288.92	100.89	676
Second	292.06	99.63	555
Third	248.44	91.10	562
Fourth	233.96	83.47	540
Fifth	235.19	89.48	537
Sixth	219.12	80.37	512

Table 3-7

Hours of Math Instruction Offered by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction Offered	174.62	48.27	15,362
Family Economic Status			
Poor/AFDC	185.81	58.08	3,116
Non-Poor	171.79	45.03	11,957
Math Achievement			
Bottom Quarter	179.39	54.93	3,681
Second Quarter	176.61	51.61	3,736
Third Quarter	173.79	47.38	4,009
Top Quarter	169.42	38.79	3,928
Math CE Selection Status			
Title I	199.48	63.07	1,099
Other CE Only	172.69	43.40	1,463
No CE	172.71	46.82	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	189.12	60.29	1,250
Second Quarter	187.45	58.71	906
Third Quarter	181.38	56.72	636
Top Quarter	176.28	48.49	321
Non-Poor			
Bottom Quarter	174.51	51.40	2,365
Second Quarter	173.14	48.68	2,756
Third Quarter	172.30	45.33	3,305
Top Quarter	168.81	37.83	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	190.29	63.04	503
Other CE Only	161.30	38.77	400
No CE	169.16	54.56	2,228
Non-Poor			
Title I	181.74	54.72	573
Other CE Only	161.63	41.86	1,027
No CE	162.72	43.10	10,369
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	203.20	62.13	520
Other CE Only	175.00	49.81	486
No CE	175.56	53.15	2,675
Second Quarter			
Title I	204.60	67.59	353
Other CE Only	173.37	46.13	392
No CE	173.73	49.07	2,991
Third Quarter			
Title I	188.57	54.63	170
Other CE Only	172.22	43.05	317
No CE	173.22	47.27	3,522
Top Quarter			
Title I	169.34	55.78	59
Other CE Only	169.68	36.72	255
No CE	169.40	38.60	3,614

Still, the variable with the strongest relationship to the amount of math offered is math CE selection status. Title I selectees are offered almost 200 hours of math while other students are offered less than 175 hours. Among students selected for Title I, the hours of math offered are higher in the first and second quarters of the achievement distribution than in the third and fourth quarters. Hence, those few high achieving (above the national median) students who are Title I selectees (about 1.4% of the total sample) are offered hours of math more commensurate with their achievement level than with their Title I selection status.

The difference between total hours of math offered to poor and non-poor students is greatest in these first two bottom quarters (about 15 hours difference) and diminishes as one moves to the third and fourth quarters (less than 10 hours difference).

The observed effects of race and grade along with family economic status (see Table 3-8) are different for math and for reading. The two largest differences are found in race (13 hours more for minority students) and family economic status (14 hours more for poor students). Also, the combined effect of race and grade shows a relationship: majority students are generally offered fewer hours of math as grade increases, but minority students are offered more hours of math in the upper grades than in the lower ones.

Another fact may be learned from Table 3-8. Across all grades, poor students are offered more hours of math than non-poor students.

In summary, the poor are offered more hours of math a year than the non-poor (about 14 hours more) and this fact holds across achievement level, CE selection status, race, and grade. However, selection for math CE, race, and the interaction of race and grade also contribute to the differences in the number of hours offered students in math.

TOTAL HOURS OF READING ATTENDED

Family economic status relates to both the total number of weeks of school attended and the number of hours of reading offered a student. It affects these variables in different ways, however. Poverty is associated with less school attendance, but with more hours of services being offered. The combined effects tend to cancel each other and therefore, poor students do not differ greatly from non-poor students in the total hours of reading services actually attended or received during the year (see Table 3-9). Selection for reading CE and achievement provide the only large subgroup differences. Basically, Title I selectees attend more hours of reading instruction than other students. Reading attendance is slightly higher at the lower levels of achievement. Among Title I selectees, however, the amount of reading instruction received is greater at the higher levels of achievement. Hours of reading attended is greatest for those in the low achieving quarters among other CE selectees and is fairly consistent across achievement categories for those not selected for any CE.

The basic pattern revealed in Table 3-9 is that which appears in Table 3-4, except that the gap between the poor and the non-poor is smaller because the poor's low attendance tends to counter the fact that more hours of reading are offered the poor than the non-poor.

Table 3-8

Hours of Math Instruction Offered by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction Offered	174.62	48.27	15,362
Family Economic Status			
Poor/AFDC	185.81	58.08	3,116
Non-Poor	171.79	45.03	11,957
Race			
Majority	171.87	46.40	11,981
Minority	184.76	53.99	3,395
Grade			
First	175.08	65.18	2,790
Second	177.42	52.14	2,496
Third	174.86	38.92	2,530
Fourth	177.70	44.25	2,384
Fifth	175.88	43.86	2,363
Sixth	167.76	37.54	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	180.52	58.29	1,511
Minority	190.78	57.17	1,605
Non-Poor			
Majority	170.57	44.14	10,249
Minority	179.09	49.44	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	184.55	72.34	562
Second	188.98	63.89	505
Third	182.14	41.09	546
Fourth	185.21	55.22	541
Fifth	194.24	63.83	476
Sixth	179.88	44.42	501
Non-Poor			
First	173.00	63.72	2,197
Second	174.36	48.40	1,951
Third	172.56	37.76	1,939
Fourth	175.61	40.32	1,808
Fifth	171.34	35.39	1,944
Sixth	165.03	35.27	2,237
Race and Grade			
Majority			
First	175.60	67.64	2,114
Second	175.91	51.54	1,941
Third	171.56	35.96	1,968
Fourth	175.45	41.86	1,844
Fifth	168.51	31.49	1,826
Sixth	164.72	35.82	2,287
Minority			
First	173.48	56.78	676
Second	182.74	53.85	555
Third	186.41	46.08	561
Fourth	185.37	50.85	540
Fifth	200.95	65.48	537
Sixth	181.32	41.83	512

Table 3-9

Hours of Reading Instruction Attended by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction Attended	232.37	94.77	15,368
Family Economic Status			
Poor/AFDC	237.52	92.93	3,117
Non-Poor	231.20	95.23	11,956
Reading Achievement			
Bottom Quarter	238.58	91.75	3,718
Second Quarter	238.00	98.16	3,934
Third Quarter	226.95	94.20	3,901
Top Quarter	226.06	94.00	3,815
Reading CE Selection Status			
Title I	258.94	94.33	1,975
Other CE Only	238.97	87.29	1,671
No CE	226.82	94.88	11,749
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	237.11	90.99	1,326
Second Quarter	240.31	92.26	954
Third Quarter	237.92	98.30	545
Top Quarter	232.70	95.80	292
Non-Poor			
Bottom Quarter	239.46	92.40	2,323
Second Quarter	237.64	100.03	2,910
Third Quarter	225.42	93.63	3,276
Top Quarter	226.10	94.19	3,450
Family Economic Status and Reading CE Selection Status			
Poor-AFDC			
Title I	262.18	95.86	801
Other CE Only	234.57	74.67	432
No CE	227.82	93.41	1,899
Non-Poor			
Title I	257.26	93.80	1,132
Other CE Only	240.27	91.42	1,195
No CE	227.05	95.35	9,641
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	253.89	91.49	1,021
Other CE Only	243.03	80.58	647
No CE	229.54	94.07	2,050
Second Quarter			
Title I	263.33	95.44	660
Other CE Only	243.91	96.71	488
No CE	230.96	98.02	2,786
Third Quarter			
Title I	267.83	101.12	210
Other CE Only	230.86	82.29	328
No CE	224.01	94.26	3,362
Top Quarter			
Title I	272.58	102.78	82
Other CE Only	228.96	94.25	200
No CE	224.81	93.52	3,533

The basic pattern revealed in Table 3-9 is that which appears in Table 3-4, except that the gap between the poor and the non-poor is smaller because the poor's low attendance tends to counter the fact that more hours of reading are offered the poor than the non-poor.

The effect can also be seen clearly in Table 3-10. Poverty does not account for large differences in the total number of hours of reading attended during the year. Rather, it is mostly grade, where the number of hours offered decreases greatly with an increase in grade, and race (minority groups, particularly in the later grades, attend more hours of reading than whites) that account for significant differences in the reading services actually received.

TOTAL HOURS OF MATH ATTENDED

Because family economic status is a stronger indicator of the total hours of math offered than it is of the total hours of reading offered, its downward influence on school attendance does not have as great an effect for math as it does for reading. Of the total hours of math received, it is clear from Table 3-11 that for Title I selectees and those not selected for any math CE, poor students receive more hours of math than non-poor students. However, for selected to Other CE, no difference exists between the poor and non-poor. Poor students across each achievement quarter generally receive more hours of math than non-poor students. Still, the greatest influence is selection for Title I CE.

As with the number of hours of math offered, economic status, race, grade and the interaction of race and grade contribute to the explanation of the total hours of math attended by students (see Table 3-12). In grade one whites attend more hours of math than other students. In the other grades minority students receive more hours of math. Across all grades the poor receive more hours of service than the non-poor.

SUMMARY

How are student economic status, student educational status, CE selection status, race and grade associated with school attendance and the hours of reading and math offered to and attended by students during the year? The data presented here indicate that poverty has a significant effect on the amount of time children spend in school. Students from impoverished homes attend less school than other students.

Poor students are offered more hours of reading and math than the non-poor students. The total hours of services offered is also highly related to grade and CE selection status. Because of the low attendance among poor students they do not differ significantly from non-poor students in the extent to which they attend reading programs. There is also a small but significant association between family economic status and attendance in math programs, but still the overall relationship is not as strong as the relationship between family economic status and the amount of reading and math offered.

In the later grades, race is an important predictor in the number of hours of reading and math offered and attended. Minority students are offered more and attend more hours of instruction in these two subjects than do white students.

Table 3-10

Hours of Reading Instruction Attended by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction Attended	232.37	94.77	15,368
Family Economic Status			
Poor/AFDC	237.52	92.93	3,117
Non-Poor	231.20	95.23	11,956
Race			
Majority	230.57	95.67	11,981
Minority	238.56	91.09	3,396
Grade			
First	302.97	99.73	2,790
Second	286.07	97.98	2,496
Third	236.63	83.69	2,529
Fourth	201.44	65.37	2,384
Fifth	190.77	60.75	2,363
Sixth	170.96	63.26	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	233.25	93.34	1,512
Minority	241.53	92.40	1,605
Non-Poor			
Majority	230.53	96.17	10,247
Minority	235.22	89.26	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	285.87	96.63	562
Second	277.91	88.68	506
Third	238.16	89.16	547
Fourth	213.26	80.03	541
Fifth	215.31	84.43	477
Sixth	189.09	73.85	501
Non-Poor			
First	307.88	100.07	2,197
Second	288.07	100.19	1,951
Third	236.24	82.54	1,938
Fourth	198.15	60.09	1,808
Fifth	184.60	51.06	1,844
Sixth	167.07	60.10	2,236
Race and Grade			
Majority			
First	314.11	98.13	2,114
Second	290.26	98.90	1,942
Third	237.31	82.81	1,967
Fourth	196.60	59.49	1,844
Fifth	181.63	47.55	1,826
Sixth	170.96	63.26	2,799
Minority			
First	268.11	96.68	676
Second	271.40	93.29	555
Third	234.25	86.74	562
Fourth	217.97	80.20	540
Fifth	221.87	85.54	532
Sixth	205.83	77.09	512

Table 3-11

Hours of Math Instruction Attended by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction Attended	165.15	46.31	15,362
Family Economic Status			
Poor/AFDC	171.66	55.00	3,116
Non-Poor	163.52	43.68	11,957
Math Achievement			
Bottom Quarter	167.62	51.98	3,681
Second Quarter	166.46	49.14	3,736
Third Quarter	165.05	46.01	4,009
Top Quarter	162.19	38.04	3,928
Math CE Selection Status			
Title I	185.51	58.92	1,099
Other CE Only	161.69	41.53	1,463
No CE	163.79	45.27	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	173.46	55.99	1,250
Second Quarter	173.31	55.72	906
Third Quarter	168.88	54.39	636
Top Quarter	166.45	48.29	321
Non-Poor			
Bottom Quarter	164.79	49.55	2,365
Second Quarter	164.25	46.69	2,256
Third Quarter	164.26	44.23	3,305
Top Quarter	161.82	37.04	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	190.29	63.04	503
Other CE Only	161.30	38.77	400
No CE	169.16	54.56	2,228
Non-Poor			
Title I	181.74	54.72	573
Other CE Only	161.63	41.86	1,027
No CE	162.72	43.10	10,369
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	187.91	57.32	520
Other CE Only	163.22	46.35	486
No CE	164.47	50.97	2,675
Second Quarter			
Title I	190.60	63.72	353
Other CE Only	161.97	43.94	392
No CE	164.19	47.00	2,991
Third Quarter			
Title I	177.29	51.87	170
Other CE Only	162.08	40.96	317
No CE	164.72	46.05	3,522
Top Quarter			
Title I	162.28	54.22	59
Other CE Only	160.28	37.07	255
No CE	162.33	37.79	3,614

Table 3-12

Hours of Math Instruction Attended by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction Attended	165.15	46.31	15,362
Family Economic Status			
Poor/AFDC	171.66	55.00	3,116
Non-Poor	163.52	43.68	11,957
Race			
Majority	163.05	44.47	11,981
Minority	172.91	52.17	3,395
Grade			
First	164.38	61.38	2,790
Second	167.84	50.28	2,496
Third	165.44	37.70	2,530
Fourth	168.36	43.62	2,384
Fifth	167.13	41.77	2,363
Sixth	158.83	36.36	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	167.14	54.47	1,511
Minority	175.91	55.17	1,605
Non-Poor			
Majority	162.42	42.74	10,249
Minority	170.15	48.44	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	169.08	65.95	562
Second	174.88	60.16	505
Third	168.18	40.91	546
Fourth	171.68	55.24	541
Fifth	181.27	59.39	476
Sixth	165.25	41.78	501
Non-Poor			
First	163.57	10.80	2,197
Second	165.89	47.33	1,951
Third	164.44	36.36	1,939
Fourth	167.48	39.68	1,808
Fifth	163.05	34.85	1,844
Sixth	157.34	34.86	2,236
Race and Grade			
Majority			
First	165.57	63.63	2,114
Second	167.19	49.79	1,941
Third	162.54	35.15	1,968
Fourth	167.00	41.20	1,844
Fifth	160.50	30.63	1,826
Sixth	156.20	34.24	2,287
Minority			
First	160.67	53.63	676
Second	170.13	51.91	555
Third	175.61	44.09	561
Fourth	173.02	50.92	540
Fifth	189.69	61.95	537
Sixth	170.58	42.71	512

CHAPTER 4. READING AND MATH INSTRUCTIONAL SETTINGS: TYPE OF TEACHER AND SIZE OF INSTRUCTIONAL GROUP

This chapter presents an analysis of the hours of reading and math received by students according to the instructional settings in which the services are received. The first part of each section focuses on the hours spent under the direction of various types of teachers. Three categories are presented: the regular teacher, the non-regular teacher (special teacher, aide or tutor) and the setting where the student works independent of a teacher. The second part of each section provides an examination of the number of hours received according to the size of the group receiving instruction. Group size is divided into three classifications: 14 or more students, 2-13 students, and individual setting. Instructional setting is analyzed according to family economic status, reading and math achievement, selection for reading and math CE, race, and grade. Analysis-of-variance tables for the discussion presented in this chapter appear in Appendix B.

READING

Regular Teacher. As indicated in Chapter 1, the average student receives 134 hours of reading in a class directed by a regular teacher. Tables 4-1 and 4-2 present the average hours of reading instruction by a regular teacher as the principal independent variables for this section. Family economic status and race are not related to the number of hours of reading received under the direction of a regular teacher. Grade provides the strongest indicator for reading instruction by a regular teacher and some differences in the hours of services received exist by achievement and CE selection groupings.

Hours of reading instruction by a regular teacher decrease as grade level increases. Students achieving in the second and third quarters have more hours with a regular teacher than other students, and those not selected for any CE receive more reading instruction from a regular teacher than CE selectees.

For Title I selectees the hours with a regular teacher increase as achievement increases. While no overall difference exists for race, a contrast appears when grade is controlled for. In grades one through three, majority students receive more hours of reading with a regular teacher than minority students.

The situation is exactly reversed for grades four through six where they receive more hours of reading instruction from a regular teacher than majority students. This same pattern holds for family economic status. In grades one through three the non-poor receive more hours of instruction from a regular teacher, but in grades four through six the poor receive more.

Non-Regular Teacher. The average student spends less than 20 hours a year learning to read from a non-regular teacher. From Table 4-3 and Figure 4-1 it is clear that poverty, achievement and CE selection are related to the services received from a non-regular teacher. The greatest effect is found for reading CE selection, where Title I selectees receive more hours (65) from a non-regular teacher than Other CE selectees (44), who in turn receive more

Table 4-1

Total Hours of Reading Instruction Attended With a Regular Teacher by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction With a Regular Teacher	134.53	76.25	15,368
Family Economic Status			
Poor/AFDC	134.42	73.95	3,144
Non-Poor	134.22	77.05	11,980
Reading Achievement			
Bottom Quarter	130.03	75.90	3,718
Second Quarter	136.90	79.16	3,934
Third Quarter	136.40	76.55	3,901
Top Quarter	132.82	73.29	3,815
Reading CE Selection Status			
Title I	128.95	73.62	1,975
Other CE Only	122.31	67.48	1,671
No CE	136.52	77.69	11,749
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	127.96	73.02	1,326
Second Quarter	136.36	71.53	954
Third Quarter	144.13	80.39	545
Top Quarter	141.32	72.71	292
Non-Poor			
Bottom Quarter	131.58	77.60	2,323
Second Quarter	137.29	81.54	2,910
Third Quarter	135.21	76.12	3,276
Top Quarter	132.65	73.52	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	132.42	73.77	806
Other CE Only	114.52	57.99	433
No CE	139.78	76.44	1,905
Non-Poor			
Title I	126.97	74.04	1,135
Other CE Only	125.28	70.24	1,198
No CE	136.18	78.07	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	125.66	74.49	1,021
Other CE Only	114.83	63.75	647
No CE	137.01	79.47	2,050
Second Quarter			
Title I	131.12	72.60	660
Other CE Only	124.77	76.95	488
No CE	140.40	80.69	2,786
Third Quarter			
Title I	134.10	73.56	210
Other CE Only	127.53	58.76	328
No CE	137.40	78.21	3,362
Top Quarter			
Title I	146.57	70.93	82
Other CE Only	132.03	69.38	200
No CE	132.54	73.55	3,533

Table 4-2

Total Hours of Reading Instruction Attended With a Regular Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours Reading Instruction With a Regular Teacher	134.53	76.25	15,368
Family Economic Status			
Poor/AFDC	134.42	73.95	3,144
Non-Poor	134.22	77.05	11,980
Race			
Majority	133.99	75.74	11,988
Minority	134.22	77.99	3,397
Grade			
First	178.26	34.61	2,790
Second	160.12	82.02	2,496
Third	133.85	74.47	2,529
Fourth	118.84	64.27	2,384
Fifth	112.40	56.37	2,363
Sixth	98.02	55.89	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	130.45	71.16	1,512
Minority	137.83	76.55	1,605
Non-Poor			
Majority	134.81	76.53	10,247
Minority	130.91	79.61	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	165.65	70.47	362
Second	151.98	79.90	506
Third	128.09	69.48	547
Fourth	126.89	76.63	541
Fifth	128.17	68.85	477
Sixth	101.74	59.60	501
Non-Poor			
First	181.80	87.63	2,197
Second	162.07	82.51	1,951
Third	135.85	76.22	1,938
Fourth	116.60	60.15	1,808
Fifth	108.35	51.93	1,844
Sixth	97.32	55.26	2,236
Race and Grade			
Majority			
First	184.65	85.86	2,114
Second	164.11	80.91	1,942
Third	135.63	74.69	1,967
Fourth	115.94	57.98	1,844
Fifth	106.64	49.00	1,826
Sixth	96.78	53.58	2,287
Minority			
First	158.28	77.29	676
Second	146.18	84.41	555
Third	127.63	73.44	562
Fourth	128.76	81.48	540
Fifth	131.99	73.01	537
Sixth	103.55	64.97	512

Table 4-3

Total Hours of Reading Instruction Attended With a Non-Regular Teacher by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction With a Non-Regular Teacher	19.48	37.07	15,368
Family Economic Status			
Poor/AFDC	31.73	45.95	3,144
Non-Poor	16.44	33.75	11,980
Reading Achievement			
Bottom Quarter	36.92	48.07	3,718
Second Quarter	23.22	39.93	3,934
Third Quarter	11.17	26.90	3,901
Top Quarter	7.56	20.26	3,815
Reading CE Selection Status			
Title I	64.58	50.64	1,982
Other CE Only	43.73	47.76	1,674
No CE	8.63	22.69	11,763
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	43.37	51.01	1,326
Second Quarter	30.76	44.91	954
Third Quarter	14.77	30.10	545
Top Quarter	11.95	28.51	292
Non-Poor			
Bottom Quarter	32.96	45.48	2,323
Second Quarter	20.72	37.80	2,910
Third Quarter	10.70	26.50	3,276
Top Quarter	7.18	19.28	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	69.58	50.88	806
Other CE Only	49.67	44.16	433
No CE	11.65	29.43	1,905
Non-Poor			
Title I	61.19	50.08	1,135
Other CE Only	41.33	48.27	1,198
No CE	8.09	21.16	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	68.12	50.06	1,021
Other CE Only	56.04	50.48	647
No CE	15.35	32.77	2,050
Second Quarter			
Title I	66.22	50.45	660
Other CE Only	44.48	47.54	488
No CE	9.30	23.28	2,786
Third Quarter			
Title I	50.98	50.50	210
Other CE Only	33.94	43.97	328
No CE	6.46	17.91	3,362
Top Quarter			
Title I	42.29	50.32	82
Other CE Only	19.38	29.82	200
No CE	6.08	17.23	3,533

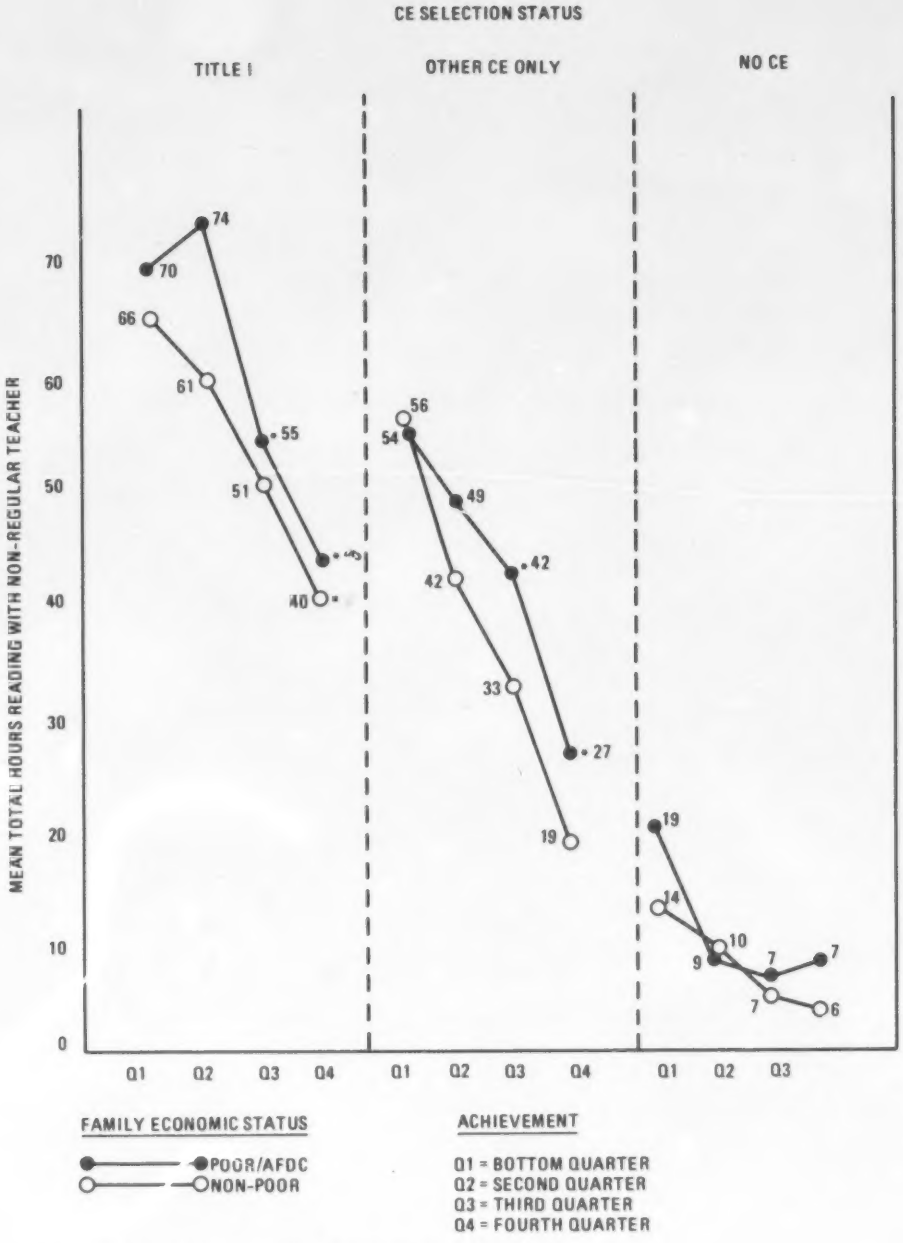

Figure 4-1

Interaction of Family Economic Status and Reading Achievement
by Reading CE Selection Status on Total Hours of
Reading With a Non-Regular Teacher

hours than students not selected for CE (9 hours). Hence, while Title I students spend a little less time than non-CE students with regular teachers, they spend nearly seven times as many hours with non-regular teachers in reading programs.

The effect of achievement is clear: the greater the achievement, the fewer the number of hours with a non-regular teacher. The effect of poverty is also apparent: overall, poor students receive twice as many hours of service as the non-poor from a non-regular teacher. Title I selectees and low achievers from poor families receive slightly more hours than non-poor selectees and low achievers. With the exception of those in the bottom achievement quarter this pattern holds for students selected for other reading CE programs. In the bottom achievement quarter non-poor selectees receive more hours from a non-regular teacher than poor selectees.

In Table 4-4 and Figure 4-2 the interactions of economic status, race and grade indicate that across all grades and for all races, poor students receive more hours of instruction than non-poor students from a non-regular reading teacher. In most cases minority students receive more hours of services than white students from a non-regular teacher. There is a decrease in the amount of instruction received from a non-regular teacher as grade level increases. This pattern holds when poverty and race are controlled for, with the exception of grades five and six when compared to other grades for poor or minority students, where there is a slight increase in the hours of instruction from a non-regular teacher.

Independent of Teacher. On the average, less than eighty hours a year are spent by students learning reading skills independently of teacher instruction. This represents about one-third of the total time spent reading during the year. According to data in Table 4-5, family economic status, reading achievement, and selection for reading CE, are all highly related to the number of hours children spend in this instructional setting. Non-poor students, high achievers and students not selected for CE spend the most time learning to read independent of a teacher. For poor and non-poor alike, the higher the achievement, the greater the number of hours in an independent program. Non-poor students are more likely to take part in independent reading programs than poor students in each achievement level. Poor Title I selectees, and bottom achievement quarter Title I selectees, spend the least amount of time learning to read independently of a teacher.

Data in Table 4-6 indicate that race and grade are also related to the amount of time spent learning to read in independent programs. Majority students (80 hours) spend more time than minority students (73 hours) in this setting. About 100 hours are spent in independent reading programs in grades one and two, which drops to 80 hours in grade three, and less than 60 hours in grade six.

The interaction of family economic status with race shows majority students receiving more hours of independent learning than minority students for both the poor and non-poor. The non-poor receive more hours of independent reading than the poor, no matter what the grade. The exception is that poor students in grade six spend more hours reading than non-poor students, independent of a teacher. Also, the difference in the time white and minority students spend independently goes from nearly 35 more hours for white students in grade one to 20 more hours for minority students in grade six.

Table 4-4

Total Hours of Reading Instruction Attended With a Non-Regular Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Instruction With a Non-Regular Teacher	19.48	37.07	15,368
Family Economic Status			
Poor/AFDC	31.73	45.95	3,144
Non-Poor	16.44	33.75	11,980
Race			
Majority	16.34	34.56	11,988
Minority	31.23	43.48	3,397
Grade			
First	25.05	39.62	2,790
Second	24.24	40.53	2,496
Third	21.69	39.56	2,529
Fourth	16.23	33.73	2,384
Fifth	14.52	34.25	2,363
Sixth	15.26	33.07	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	28.35	45.97	1,512
Minority	34.73	45.74	1,605
Non-Poor			
Majority	14.61	32.17	10,247
Minority	27.43	40.35	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	38.61	46.64	562
Second	39.21	51.61	506
Third	35.07	44.08	547
Fourth	24.53	41.24	541
Fifth	25.02	43.92	477
Sixth	26.49	45.22	501
Non-Poor			
First	21.52	36.65	2,197
Second	20.21	35.79	1,951
Third	17.97	37.25	1,938
Fourth	13.79	30.82	1,808
Fifth	11.93	30.79	1,844
Sixth	12.72	28.90	2,236
Race and Grade			
Majority			
First	21.45	38.14	2,114
Second	20.57	37.65	1,942
Third	18.77	37.97	1,967
Fourth	13.82	31.70	1,844
Fifth	10.92	30.53	1,826
Sixth	12.20	28.71	2,287
Minority			
First	36.23	42.01	676
Second	37.09	47.14	555
Third	31.87	43.20	562
Fourth	24.45	38.82	540
Fifth	26.77	42.47	537
Sixth	28.90	45.52	512

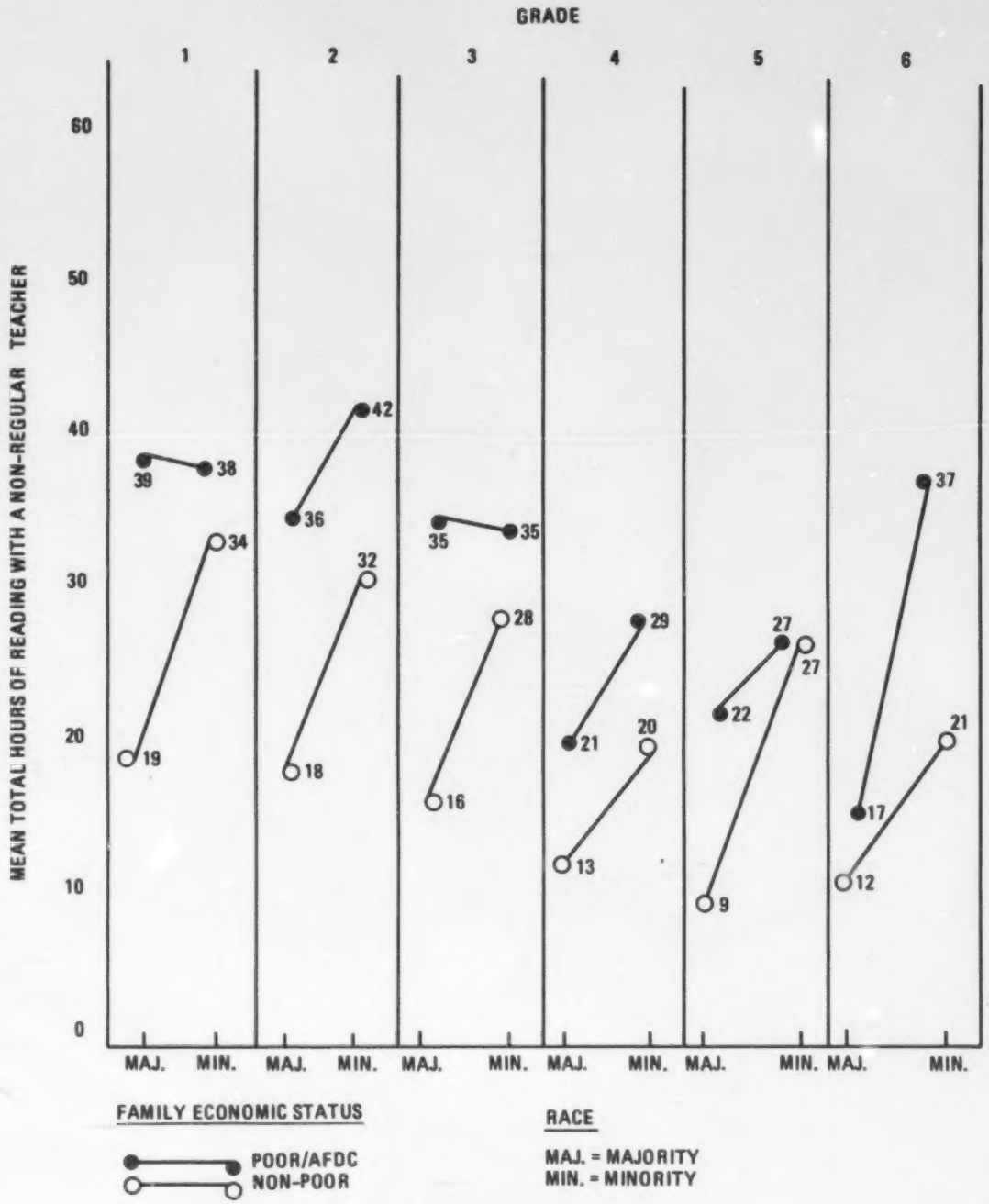

Figure 4-2

Interaction of Family Economic Status and Race by
Grade on Total Hours of Reading
With a Non-Regular Teacher

Table 4-5

Total Hours of Reading Independent of Teacher by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Independent of Teacher	77.99	56.91	15,368
Family Economic Status			
Poor/AFDC	71.21	55.38	3,144
Non-Poor	80.39	57.33	11,980
Reading Achievement			
Bottom Quarter	71.43	53.35	3,718
Second Quarter	77.52	55.85	3,934
Third Quarter	79.07	57.54	3,901
Top Quarter	85.47	59.99	3,815
Reading CE Selection Status			
Title I	65.01	54.73	1,982
Other CE Only	73.13	50.89	1,674
No CE	81.44	57.78	11,763
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	65.56	51.76	1,326
Second Quarter	72.72	54.63	954
Third Quarter	78.65	61.05	545
Top Quarter	78.60	60.98	292
Non-Poor			
Bottom Quarter	74.74	54.29	2,323
Second Quarter	79.32	56.22	2,910
Third Quarter	79.20	57.03	3,276
Top Quarter	86.10	60.03	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	60.07	53.63	806
Other CE Only	69.93	47.81	433
No CE	76.20	57.02	1,905
Non-Poor			
Title I	68.90	55.75	1,135
Other CE Only	74.01	51.52	1,198
No CE	82.54	57.98	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	59.86	51.04	1,021
Other CE Only	71.97	49.81	647
No CE	77.03	54.64	2,050
Second Quarter			
Title I	65.62	54.50	660
Other CE Only	74.47	50.77	488
No CE	80.87	56.62	2,786
Third Quarter			
Title I	81.99	62.58	210
Other CE Only	69.35	50.42	328
No CE	79.84	57.79	3,362
Top Quarter			
Title I	[illegible].53	68.13	82
Other CE Only	77.54	53.81	200
No CE	85.96	60.11	3,533

Table 4-6

Total Hours of Reading Independent of Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading Independent of Teacher	77.99	56.91	15,368
Family Economic Status			
Poor/AFDC	71.21	55.38	3,144
Non-Poor	80.39	57.33	11,980
Race			
Majority	79.97	57.57	11,988
Minority	72.75	54.45	3,397
Grade			
First	99.32	60.94	2,790
Second	101.49	67.47	2,496
Third	80.95	54.22	2,529
Fourth	65.85	48.71	2,384
Fifth	63.76	46.16	2,363
Sixth	57.39	43.27	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	74.13	58.12	1,512
Minority	68.54	52.77	1,605
Non-Poor			
Majority	80.88	57.57	10,247
Minority	76.59	55.24	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	81.20	59.37	562
Second	86.31	60.08	506
Third	74.84	56.01	547
Fourth	61.16	52.51	541
Fifth	61.87	51.77	477
Sixth	60.52	44.89	501
Non-Poor			
First	104.25	60.39	2,197
Second	105.62	68.72	1,951
Third	82.26	53.70	1,938
Fourth	67.27	47.87	1,808
Fifth	64.26	44.51	1,844
Sixth	56.76	42.96	2,236
Race and Grade			
Majority			
First	107.73	60.34	2,114
Second	105.43	69.14	1,942
Third	82.77	54.74	1,967
Fourth	66.27	46.83	1,844
Fifth	64.01	43.79	1,826
Sixth	53.88	41.57	2,287
Minority			
First	73.04	55.09	676
Second	87.67	59.27	555
Third	74.57	51.90	562
Fourth	64.41	54.68	540
Fifth	62.88	53.46	537
Sixth	73.04	47.12	512

Class With 14 or More Students. Attention is now turned to the size of class as the instructional setting for analysis. The average student spends close to 60 hours a year receiving reading instruction in a large group (14 or more students). Data in Table 4-7 indicate that the selection for reading CE is highly related to the time spent in a large class.

Those not selected for any CE spend about 64 hours in these reading classes, Title J selectees about 50 hours, and students selected for Other CE about 35 hours. Achievement is also related: those students below the national median spend less than 60 hours a year in large group instruction, and those above the median more than 60 hours. The interaction of these two variables shows that the CE selection status pattern holds across all achievement quarters.

With only one-half hour of large group instruction separating the poor and the non-poor it appears that family economic status is not related to hours of service in a class with 14 or more students. However, a multiple classification analysis shows that when achievement and CE status are controlled for, the difference (and direction in deviation) from the grand mean changes for the poor and non-poor. Under these conditions, the poor spend about four hours more in large group reading instruction than the non-poor.

In every achievement category except the top quarter, students from poor families receive more hours of large group instruction than non-poor students. Also, students from poor families receive more hours than non-poor students in the large class setting--if they are also Title I selectees or not selected for any CE. However, poor students selected for Other CE receive fewer hours than non-poor students selected for Other CE of large group reading instruction.

Data presented in Table 4-8 reflect the fact that grade has the greatest impact on large group reading instruction. The higher the grade level the fewer the number of hours of large group reading. The interaction of family economic status and race shows some relationship. Poor minority students participate in more hours of large group reading than poor white students. On the other hand, non-poor whites spend more hours than non-poor minority students in classes with 14 or more students. The interaction of race and grade also shows a relationship. Majority students spend more hours than minority students in large group reading in grades one through three. In the later grades the pattern is reversed.

Class With 2-13 Students. Table 4-9 presents data indicating subgroup differences for each of the independent variables in the total hours of reading instruction received in a small group setting. That which shows the strongest relationship is CE selection status, where Title I selectees participate in over 140 hours, Other CE selectees participate in almost 130 hours, and students not selected for any CE participate in less than 80 hours of small group instruction.

Achievement level is also related to hours of small group instruction. The lower the achievement quarter, the higher the number of hours spent in small reading classes. Those in the bottom quarter spend about 112 hours in classes of 2-13 students while those in the top quarter spend less than 80 hours in these size classes.

Table 4-7

Total Hours of Reading Instruction Attended in a Class With 14 or More Students by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading in a Class With 14 or More Students	59.05	68.45	15,368
Family Economic Status			
Poor/AFDC	59.04	72.03	3,144
Non-Poor	59.53	67.76	11,980
Reading Achievement			
Bottom Quarter	53.00	67.83	3,718
Second Quarter	56.80	67.80	3,934
Third Quarter	65.82	71.40	3,901
Top Quarter	61.76	66.57	3,815
Reading CE Selection Status			
Title I	50.54	68.38	1,982
Other CE Only	34.97	52.99	1,674
No CE	64.33	69.67	11,763
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	54.80	71.36	1,326
Second Quarter	58.09	70.29	954
Third Quarter	71.66	78.40	545
Top Quarter	58.77	66.93	292
Non-Poor			
Bottom Quarter	51.96	65.74	2,323
Second Quarter	56.27	66.97	2,910
Third Quarter	64.92	70.50	3,276
Top Quarter	62.34	66.58	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	54.57	72.73	806
Other CE Only	30.32	49.41	433
No CE	67.45	74.20	1,905
Non-Poor			
Title I	47.40	65.30	1,135
Other CE Only	36.73	54.14	1,198
No CE	63.79	68.82	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	50.42	69.77	1,021
Other CE Only	33.41	50.24	647
No CE	60.47	70.34	2,050
Second Quarter			
Title I	50.45	68.21	660
Other CE Only	33.91	52.87	488
No CE	62.31	69.07	2,786
Third Quarter			
Title I	53.39	65.80	210
Other CE Only	35.83	52.01	328
No CE	69.52	72.60	3,362
Top Quarter			
Title I	46.50	60.56	82
Other CE Only	42.66	63.19	200
No CE	63.20	66.69	3,533

Table 4-8

Total Hours of Reading Instruction Attended in a Class With 14 or More Students by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In a Class With 14 or More Students	59.05	68.45	15,368
Family Economic Status			
Poor/AFDC	59.04	72.03	3,144
Non-Poor	59.53	67.76	11,980
Race			
Majority	59.89	66.77	11,988
Minority	57.55	74.49	3,397
Grade			
First	178.26	84.61	2,790
Second	160.12	82.02	2,496
Third	133.85	74.47	2,529
Fourth	118.84	64.27	2,384
Fifth	112.40	56.37	2,363
Sixth	98.02	55.89	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	54.18	64.61	1,512
Minority	62.93	77.62	1,605
Non-Poor			
Majority	60.79	67.09	10,247
Minority	51.98	70.94	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	59.44	72.60	562
Second	53.57	79.58	506
Third	54.03	70.39	547
Fourth	59.21	70.84	541
Fifth	78.40	76.78	477
Sixth	49.24	55.17	501
Non-Poor			
First	60.20	75.81	2,197
Second	55.37	74.67	1,951
Third	61.26	73.54	1,938
Fourth	59.51	65.16	1,808
Fifth	59.50	61.19	1,844
Sixth	60.86	53.19	2,236
Race and Grade			
Majority			
First	184.65	85.86	2,114
Second	164.11	80.91	1,942
Third	135.63	74.69	1,967
Fourth	115.94	57.98	1,844
Fifth	106.64	49.00	1,826
Sixth	96.78	53.58	2,287
Minority			
First	158.28	77.29	676
Second	146.18	84.41	555
Third	127.63	73.44	562
Fourth	128.76	81.48	540
Fifth	131.99	73.01	537
Sixth	103.55	64.97	512

Table 4-9

Total Hours of Reading Instruction Attended in a Class With 2-13 Students by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In a Class With 2-13 Students	92.16	77.31	15,368
Family Economic Status			
Poor/AFDC	105.59	77.29	3,144
Non-Poor	89.33	77.31	11,980
Reading Achievement			
Bottom Quarter	111.83	75.22	3,718
Second Quarter	101.26	80.70	3,934
Third Quarter	80.47	74.23	3,901
Top Quarter	77.16	73.82	3,815
Reading CE Selection Status			
Title I	141.60	76.58	1,982
Other CE Only	128.98	70.66	1,674
No CE	79.10	73.36	11,763
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	114.61	72.28	1,326
Second Quarter	107.59	78.55	954
Third Quarter	86.46	78.42	545
Top Quarter	93.58	82.63	292
Non-Poor			
Bottom Quarter	110.32	76.76	2,323
Second Quarter	99.44	72.21	2,910
Third Quarter	79.62	67.81	3,276
Top Quarter	75.96	74.72	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	145.71	76.25	806
Other CE Only	131.89	62.61	433
No CE	82.65	71.56	1,905
Non-Poor			
Title I	139.14	76.30	1,135
Other CE Only	127.83	73.73	1,198
No CE	78.68	73.98	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	141.88	72.76	1,021
Other CE Only	134.50	64.02	647
No CE	89.70	72.34	2,050
Second Quarter			
Title I	144.88	77.03	660
Other CE Only	133.97	75.95	488
No CE	85.19	76.73	2,786
Third Quarter			
Title I	130.42	87.16	210
Other CE Only	124.25	72.08	328
No CE	73.08	70.82	3,362
Top Quarter			
Title I	140.80	89.39	82
Other CE Only	107.12	72.15	200
No CE	73.98	72.48	3,533

The family economic status variable shows an overall difference between poor and non-poor students of 16 hours of small group interaction. However, this difference narrows considerably when the interaction of family economic status and CE selection is analyzed. The greatest difference between poor and non-poor students is among Title I selectees. Here the net difference is less than 7 hours or half of the overall difference. Among Other CE selectees and those not selected for any CE the difference is about 4 hours. Multiple classification analysis confirms that the difference in family economic status disappears when reading CE selection status and achievement are controlled for.

Table 4-10 permits further analysis of reading instruction in small group settings. It is clear that grade level is the best indicator of the number of hours of reading in a small class. The number of hours decreases as grade level increases.

As indicated previously, the difference for family economic status is due largely to the intervening variable of CE selection. Of more interest is the interaction of race and CE selection as well as grade and CE selection. Data for these interactions are presented in Table 4-11. They show that white Title I selectees receive a few more hours (143) of small group reading instruction than minority Title I selectees (139). On the other hand, white selectees for Other CE spend less time (123 hours) than minority Other CE selectees (140) in small reading classes. Minority students who are not CE selectees spend more hours (84) than white non-CE students (78) in these small classes.

The following patterns appear with the interaction of CE selection and grade on the hours spent in a small group instructional setting. For each CE selection category the hours spent in a small reading class decrease as grade level increases. The one exception is that Title I sixth graders spend more time than Title I fifth graders in these small classes. Title I and Other CE selectees participate in the same amount of small group reading in grades one, three, four and five. Title I selectees receive substantially more hours of small group instruction than Other CE selectees in grades two and six. In grades one and two, students not selected for any CE spend less than 80 percent of the time spent by all CE selectees in small group reading sessions. In grade three the figure is less than 60 percent and drops to less than 50 percent in grades four through six. Finally, the drop off within CE selection category by grade varies: Title I selectees in grade five spend 40 percent less time in small group reading than first grade Title I selectees, and it is back up to only 30 percent less in grade six. Sixth grade Other CE selectees participate in 49 percent less small group reading than first grade Other CE selectees and those not selected for any CE spend 67 percent less time in grade six than in grade one in small group reading. Hence, CE selection, particularly Title I selection, provides for more hours of small group instruction than non-selection from grade to grade and maintains that service at a higher level from grade one to grade six.

Independent Instructional Setting. The last kind of instructional service analyzed for reading is that where the student is working alone, either with or without a teacher. About 80 hours a year are spent by the average student in this type of reading environment (all but about 2 hours without a teacher). Again, all five independent variables are related to the hours a student spends in this setting (see Tables 4-12 and 4-13). In Table 4-12 the strongest relationship appears to be provided by reading CE selection. Title I selectees (67) and Other CE selectees (75) have fewer hours of individual reading than those not selected for CE (83). Achievement is also related; the greater the achievement quarter, the higher the number of hours spent in individual instructional settings.

Table 4-10

Total Hours of Reading Instruction in a Class With 2-13 Students by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In a Class With 2-13 Students	92.16	77.31	15,368
Family Economic Status			
Poor/AFDC	105.59	77.29	3,144
Non-Poor	89.33	77.31	11,980
Race			
Majority	88.85	77.89	11,988
Minority	105.67	74.41	3,397
Grade			
First	178.26	84.61	2,790
Second	160.12	82.02	2,496
Third	133.85	74.47	2,529
Fourth	118.84	64.27	2,384
Fifth	112.40	56.37	2,363
Sixth	98.02	55.89	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	103.10	79.87	1,512
Minority	108.42	74.72	1,605
Non-Poor			
Majority	87.36	77.33	10,247
Minority	103.40	74.21	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	141.68	77.25	562
Second	136.11	82.55	506
Third	107.93	66.82	541
Fourth	91.33	69.93	477
Fifth	73.69	65.00	501
Sixth	77.87	72.60	501
Non-Poor			
First	139.25	80.69	2,197
Second	124.60	79.22	1,951
Third	90.91	72.40	1,938
Fourth	69.94	65.07	1,808
Fifth	59.60	58.06	1,844
Sixth	48.45	56.16	2,236
Race and Grade			
Majority			
First	184.65	85.86	2,114
Second	164.11	80.91	1,942
Third	135.63	74.69	1,967
Fourth	115.94	57.98	1,844
Fifth	106.64	49.00	1,826
Sixth	96.78	53.58	2,287
Minority			
First	158.28	77.29	676
Second	146.18	84.41	555
Third	127.63	73.44	562
Fourth	128.76	81.48	540
Fifth	131.99	73.01	537
Sixth	103.55	64.97	512

Table 4-11

Total Hours of Reading Instruction in a Class With 2-13 Students by Reading CE Selection Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In a Class With 2-13 Students	92.16	77.31	15,368
Reading CE Selection Status And Race			
Title I			
Majority	143.41	80.11	1,258
Minority	138.54	70.16	712
Other CE Only			
Majority	122.88	76.71	1,069
Minority	140.01	56.99	602
No CE			
Majority	77.97	73.54	9,654
Minority	84.45	72.47	2,083
Reading CE Selection Status And Grade			
Title I			
First	169.57	80.02	320
Second	173.00	81.99	395
Third	139.57	62.68	378
Fourth	131.50	72.55	349
Fifth	104.57	63.59	297
Sixth	117.36	70.52	236
Other CE Only			
First	166.28	75.89	321
Second	144.35	56.25	343
Third	138.69	72.92	264
Fourth	123.05	59.20	238
Fifth	100.69	59.42	233
Sixth	85.31	63.40	272
No CE			
First	130.78	78.36	2,161
Second	113.53	78.92	1,759
Third	79.32	66.36	1,894
Fourth	57.56	56.64	1,803
Fifth	50.83	54.00	1,835
Sixth	43.62	53.29	2,229

Table 4-12

Total Hours of Reading in an Individual Instructional Setting by Family Economic Status, Reading Achievement, and Reading CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In Individual Setting	79.72	57.60	15,368
Family Economic Status			
Poor/AFDC	72.73	55.84	3,144
Non-Poor	82.21	58.09	11,980
Reading Achievement			
Bottom Quarter	73.56	54.12	3,718
Second Quarter	79.59	56.79	3,934
Third Quarter	80.34	58.09	3,901
Top Quarter	86.92	60.58	3,815
Reading CE Selection Status			
Title I	66.66	55.33	1,982
Other CE Only	75.15	51.16	1,674
No CE	83.15	58.55	11,763
Family Economic Status and Reading Achievement			
Poor/AFDC			
Bottom Quarter	67.48	52.51	1,326
Second Quarter	74.16	54.92	954
Third Quarter	79.43	61.34	545
Top Quarter	79.53	61.14	292
Non-Poor			
Bottom Quarter	77.00	54.82	2,323
Second Quarter	81.62	57.36	2,910
Third Quarter	80.58	57.64	3,276
Top Quarter	87.63	60.66	3,450
Family Economic Status and Reading CE Selection Status			
Poor/AFDC			
Title I	61.80	54.15	806
Other CE Only	71.91	48.28	433
No CE	77.53	57.48	1,905
Non-Poor			
Title I	70.52	56.41	1,135
Other CE Only	76.08	51.72	1,198
No CE	84.34	58.82	9,648
Reading Achievement and Reading CE Selection Status			
Bottom Quarter			
Title I	61.34	51.72	1,021
Other CE Only	74.93	50.05	647
No CE	79.22	55.54	2,050
Second Quarter			
Title I	67.63	55.16	660
Other CE Only	75.84	51.25	488
No CE	83.07	57.67	2,786
Third Quarter			
Title I	83.27	63.01	210
Other CE Only	70.75	50.61	328
No CE	81.10	58.38	3,362
Top Quarter			
Title I	85.08	68.22	82
Other CE Only	79.17	53.85	200
No CE	87.40	60.74	3,533

Table 4-13

Total Hours of Reading in an Individual Instructional Setting by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Reading In Individual Setting	79.72	57.60	15,368
Family Economic Status			
Poor/AFDC	72.73	55.84	3,144
Non-Poor	82.21	58.09	11,980
Race			
Majority	81.56	58.29	11,988
Minority	74.98	55.06	3,397
Grade			
First	103.00	61.34	2,790
Second	103.61	67.60	2,496
Third	82.50	55.06	2,529
Fourth	66.75	49.38	2,384
Fifth	64.93	46.70	2,363
Sixth	58.16	43.46	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	75.65	58.70	1,512
Minority	70.04	53.09	1,605
Non-Poor			
Majority	82.50	58.31	10,247
Minority	79.54	56.04	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	84.33	59.88	562
Second	87.84	59.70	506
Third	76.04	56.47	547
Fourth	62.04	53.42	541
Fifth	62.96	52.51	477
Sixth	61.64	44.81	501
Non-Poor			
First	108.11	60.69	2,197
Second	107.93	68.92	1,951
Third	83.92	54.66	1,938
Fourth	68.22	48.51	1,808
Fifth	65.44	45.02	1,844
Sixth	57.48	43.20	2,236
Race and Grade			
Majority			
First	111.07	60.76	2,114
Second	106.66	69.31	1,942
Third	84.44	55.73	1,967
Fourth	67.06	43.40	1,844
Fifth	64.88	43.96	1,826
Sixth	54.47	41.74	2,287
Minority			
First	77.79	56.09	696
Second	89.41	59.12	555
Third	75.72	52.12	562
Fourth	65.73	55.66	540
Fifth	65.12	55.05	537
Sixth	54.63	47.05	512

The interaction of achievement and CE selection reveals an interesting finding. Title I selectees in the bottom and second quarter spend the least amount of time working alone. Those Title I selectees above the national median (the third and top quarters) spend as much time and sometimes more time than those not selected for any CE working alone. This suggests that Title I selectees above the national median are not getting the same service as Title I selectees below the median. These better achieving students are spending more hours than the low achieving students reading apart from other students.

The overall difference for the poor and non-poor (about 11 hours), reflected in Table 4-12, holds fairly constant when family economic status is combined with CE selection or achievement. Still, of the three variables in the table, family economic status is the weakest predictor of individual learning.

Data in Table 4-13 reveal several other patterns pertaining to time spent in individual instructional settings. Grade is strongly related to individual learning. In grades one and two, over 100 hours are spent at individual learning. This drops to 83 hours for grade three and 58 to 67 hours in grades four through six.

The interactions of grade and family economic status, and grade and race, are interesting. In grades one, two and three the non-poor students and majority students spend more time than the poor students and minority students learning to read alone. This trend is reversed slightly in the later grades where poor students and minority students generally spend more time than other students in individual learning settings.

MATH

Regular Teacher. The data presented in Table 4-14 do not reveal any strong relationships between the independent variables and time spent learning math from a regular teacher. Students from low-income families average about 4 hours more a year of math instruction from a regular teacher than non-poor students. There is little deviation from the overall mean by achievement quarter. Title I selectees and students not selected for any CE spend slightly more than 100 hours under the tutelage of a regular teacher, but students selected for Other CE spend less than 90 hours with a regular teacher.

The difference noted between poor and non-poor students is maintained across achievement quarters, selection for Title I, and no CE. However, non-poor students selected for Other CE receive about 4 more hours than poor Other CE selectees of math instruction from a regular teacher. Also, Other CE selectees who achieve above the national median receive more hours of regular teacher instruction than Other CE selectees below the achievement median.

Race and grade do not appear to be strongly related to regular teacher instruction in math (see Table 4-15). Minority students receive about 4 hours more than whites of regular teacher instruction. Students in grades one through three receive between 96 and 99 hours, while those in grades four through six are involved in between 105 and 107 hours. Generally, poor students, regardless of race or grade, receive slightly more hours of regular teacher math instruction. The single exception is grade six, where non-poor students receive an average of two more hours of regular teacher instruction.

Table 4-14

Total Hours of Math Instruction Attended With a Regular Teacher by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction With a Regular Teacher	101.36	44.72	15,362
Family Economic Status			
Poor/AFDC	105.03	48.34	3,143
Non-Poor	101.08	43.72	11,982
Math Achievement			
Bottom Quarter	101.44	46.12	3,681
Second Quarter	101.19	45.39	3,736
Third Quarter	102.98	44.41	4,009
Top Quarter	101.59	42.94	3,978
Math CE Selection Status			
Title I	101.87	49.26	1,099
Other CE Only	87.58	39.81	1,463
No CE	103.40	44.57	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	104.85	47.81	1,250
Second Quarter	104.26	48.17	906
Third Quarter	106.44	48.40	636
Top Quarter	105.73	50.57	321
Non-Poor			
Bottom Quarter	99.08	45.29	2,365
Second Quarter	100.33	44.40	2,756
Third Quarter	102.41	43.59	3,305
Top Quarter	101.25	42.15	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	104.34	51.43	509
Other CE Only	85.01	38.91	401
No CE	108.77	48.26	2,233
Non-Poor			
Title I	99.61	47.18	576
Other CE Only	88.75	39.91	1,030
No CE	102.39	43.69	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	101.27	48.53	520
Other CE Only	84.75	39.37	486
No CE	104.51	46.14	2,675
Second Quarter			
Title I	103.57	52.48	353
Other CE Only	84.06	36.62	392
No CE	103.16	45.07	2,991
Third Quarter			
Title I	101.47	44.90	170
Other CE Only	91.38	39.96	317
No CE	104.10	44.63	3,522
Top Quarter			
Title I	103.77	46.96	59
Other CE Only	92.78	43.31	255
No CE	102.18	42.79	3,614

Table 4-15

Total Hours of Math Instruction Attended With a Regular Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction With a Regular Teacher	101.36	44.72	15,362
Family Economic Status			
Poor/AFDC	105.03	48.34	3,143
Non-Poor	101.08	43.72	11,982
Race			
Majority	100.88	43.52	11,981
Minority	105.11	48.26	3,395
Grade			
First	96.11	47.03	2,790
Second	97.08	43.71	2,496
Third	99.06	37.99	2,530
Fourth	105.05	44.67	2,384
Fifth	106.98	46.32	2,363
Sixth	107.02	45.85	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	102.79	47.85	1,511
Minority	107.15	48.84	1,605
Non-Poor			
Majority	100.68	42.87	10,249
Minority	103.38	47.70	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	99.62	47.99	562
Second	101.30	51.02	505
Third	99.89	39.42	546
Fourth	108.83	49.42	541
Fifth	116.07	55.07	476
Sixth	105.49	44.91	501
Non-Poor			
First	95.40	47.60	2,197
Second	95.74	41.58	1,951
Third	99.10	37.43	1,939
Fourth	104.44	42.93	1,808
Fifth	104.53	43.39	1,844
Sixth	107.46	46.16	2,236
Race and Grade			
Majority			
First	96.41	48.38	2,114
Second	97.22	42.51	1,941
Third	96.92	36.32	1,968
Fourth	103.90	42.76	1,844
Fifth	102.92	45.54	1,826
Sixth	107.53	45.54	2,287
Minority			
First	95.19	42.55	676
Second	96.59	47.70	555
Third	106.57	42.52	561
Fourth	108.98	50.51	540
Fifth	120.79	55.21	537
Sixth	104.73	47.18	512

Non-Regular Teacher. Overall not many hours are spent during the school year learning math from a non-regular teacher. From data in Table 4-16 the students spending the most time with non-regular teachers are the poor (15 hours), those whose achievement score places them in the bottom quarter (14 hours), Title I selectees (39 hours), and Other CE selectees (15 hours). When family economic status interacts with achievement three subgroups stand out: poor, bottom quarter (20 hours); poor, second quarter (15 hours); and non-poor, bottom quarter (12 hours).

The interaction of economic status and CE selection is even more revealing. Poor Title I selectees attend 44 hours of math instruction with a non-regular teacher. Non-poor Title I selectees only spend 36 hours. Poor Other CE selectees participate in 27 hours compared to non-poor Other CE selectees who receive 16 hours of math instruction from a non-regular teacher. The interaction of achievement and CE selection further shows that time spent with a non-regular teacher is concentrated among CE selectees, particularly Title I selectees, in the low achievement categories.

The above suggests that math instruction by a non-regular teacher is generally a CE funded service provided the poor and low achieving.

Table 4-17 presents data showing that race does differentiate on the number of hours of service received, but that grade does not. The relationship of race to hours of instruction by a non-regular teacher is influenced somewhat by family economic status.

Independent of Teacher. No strong relationships appear in Table 4-18 differentiating between students and the number of hours spent learning math independently of a teacher. The subgroups where hours spent learning without a teacher drops below the mean are those subgroups that receive above average hours with a non-regular teacher: namely, poor students, students in the bottom quarter, and Title I selectees. The trade-off seems to be that these students receive instruction from a non-regular teacher while other students work more alone.

Grade also contributes to differentiating between students on hours spent learning math independently of a teacher (see Table 4-19). Students in the lower grades spend more time learning math alone than students in the upper grades.

Class With 14 or More Students. More hours of math instruction are received in large group settings. Of the approximately 165 hours of math received by the average student during the year, 78 hours are spent in classes with 14 or more students. Data in Tables 4-20 and 4-21 indicate that slight variations exist according to family economic status, achievement, race, and grade. The greatest variation occurs for math CE selection status. Students selected for Other CE spend the least amount of time (53 hours) in large math instructional groups. This holds across economic status and achievement quarters.

For students selected for Title I, over 70 hours a year are spent in large instructional groups. This varies slightly by achievement category. Title I selectees in the bottom quarter spend 68 hours while those few selectees in the top quarter spend 80 hours in math classes with 14 or more students. This variation by achievement where the lower the achievement the fewer the hours of large group instruction holds for each CE selection category.

Overall, those not selected for any CE receive the most hours (82) of large group instruction.

Table 4-16

Total Hours of Math Instruction Attended With a Non-Regular Teacher by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction With a Non-Regular Teacher	8.31	22.38	15,362
Family Economic Status			
Poor/AFDC	14.89	29.66	3,143
Non-Poor	6.71	19.78	11,982
Math Achievement			
Bottom Quarter	14.49	29.12	3,681
Second Quarter	10.09	24.38	3,736
Third Quarter	5.54	16.68	4,009
Top Quarter	4.01	16.40	3,928
Math CE Selection Status			
Title I	39.24	39.59	1,099
Other CE Only	18.94	25.46	1,463
No CE	4.54	16.98	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	19.58	34.27	1,250
Second Quarter	15.38	30.29	906
Third Quarter	8.76	19.76	636
Top Quarter	6.55	18.98	321
Non-Poor			
Bottom Quarter	11.87	25.74	2,365
Second Quarter	8.38	21.97	2,756
Third Quarter	4.83	15.51	3,305
Top Quarter	3.75	15.79	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	43.66	39.83	509
Other CE Only	26.67	30.41	401
No CE	6.22	20.57	2,233
Non-Poor			
Title I	35.80	39.02	576
Other CE Only	15.98	22.74	1,030
No CE	4.18	15.94	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	43.82	40.55	520
Other CE Only	23.66	27.24	486
No CE	7.11	21.82	2,675
Second Quarter			
Title I	42.16	50.70	353
Other CE Only	22.29	27.73	392
No CE	4.71	16.63	2,991
Third Quarter			
Title I	28.61	32.58	170
Other CE Only	15.48	22.82	317
No CE	3.53	13.43	3,522
Top Quarter			
Title I	11.65	19.48	59
Other CE Only	10.10	18.33	255
No CE	3.46	16.08	3,614

Table 4-17

Total Hours of Math Instruction Attended With a Non-Regular Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Instruction With a Non-Regular Teacher	8.31	22.38	15,362
Family Economic Status			
Poor/AFDC	14.89	29.66	3,143
Non-Poor	5.71	19.78	11,982
Race			
Majority	6.20	19.89	11,981
Minority	16.14	28.53	3,395
Grade			
First	7.41	16.56	2,790
Second	7.97	19.57	2,496
Third	8.63	21.41	2,530
Fourth	8.96	23.72	2,384
Fifth	10.83	30.93	2,363
Sixth	6.89	21.02	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	10.83	28.84	1,511
Minority	18.49	30.43	1,605
Non-Poor			
Majority	5.49	18.08	10,249
Minority	13.95	26.58	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	13.90	22.35	562
Second	12.72	27.81	505
Third	16.74	28.11	546
Fourth	13.53	28.24	541
Fifth	17.30	37.78	476
Sixth	14.73	32.44	501
Non-Poor			
First	5.78	14.31	2,197
Second	6.77	16.64	1,951
Third	6.48	18.68	1,939
Fourth	7.44	20.66	1,808
Fifth	9.41	29.13	1,844
Sixth	5.19	17.18	2,236
Race and Grade			
Majority			
First	5.05	13.43	2,114
Second	5.51	14.88	1,941
Third	6.06	18.09	1,968
Fourth	7.28	22.82	1,844
Fifth	8.14	27.88	1,826
Sixth	5.52	19.72	2,287
Minority			
First	14.78	22.29	676
Second	16.57	29.25	555
Third	17.63	28.53	561
Fourth	14.69	25.79	540
Fifth	20.12	38.22	537
Sixth	13.03	25.20	512

Table 4-18

Total Hours of Math Independent of Teacher by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Independent of Teacher	54.49	37.93	15,362
Family Economic Status			
Poor/AFDC	51.58	37.91	3,143
Non-Poor	55.73	37.97	11,982
Math Achievement			
Bottom Quarter	51.48	38.38	3,681
Second Quarter	55.06	38.30	3,736
Third Quarter	56.46	38.16	4,009
Top Quarter	56.55	37.10	3,928
Math CE Selection Status			
Title I	44.27	34.18	1,099
Other CE Only	55.05	34.91	1,463
No CE	55.76	38.44	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	48.71	37.20	1,250
Second Quarter	53.63	38.95	906
Third Quarter	53.52	38.25	636
Top Quarter	54.13	36.94	321
Non-Poor			
Bottom Quarter	52.94	38.74	2,365
Second Quarter	55.43	38.17	2,756
Third Quarter	56.99	38.03	3,305
Top Quarter	56.77	37.17	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	42.24	35.02	509
Other CE Only	49.45	33.84	401
No CE	54.09	38.89	2,233
Non-Poor			
Title I	46.17	33.43	576
Other CE Only	57.40	35.81	1,030
No CE	56.10	38.34	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	42.72	34.52	520
Other CE Only	54.58	38.78	486
No CE	52.62	38.79	2,675
Second Quarter			
Title I	44.62	34.99	353
Other CE Only	55.52	35.97	392
No CE	56.26	38.79	2,991
Third Quarter			
Title I	47.15	30.56	170
Other CE Only	55.11	32.73	317
No CE	57.04	38.89	3,522
Top Quarter			
Title I	46.84	36.58	59
Other CE Only	57.39	32.94	255
No CE	56.65	37.37	3,614

Table 4-19

Total Hours of Math Independent of Teacher by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math Independent of Teacher	54.49	37.93	15,362
Family Economic Status			
Poor/AFDC	51.58	37.91	3,143
Non-Poor	55.73	37.97	11,982
Race			
Majority	55.90	38.51	11,981
Minority	51.44	36.05	3,395
Grade			
First	60.84	39.24	2,790
Second	62.57	34.25	2,496
Third	57.70	35.53	2,530
Fourth	54.24	40.10	2,384
Fifth	49.23	37.75	2,363
Sixth	44.80	37.31	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	53.46	39.51	1,511
Minority	49.97	36.34	1,605
Non-Poor			
Majority	56.17	38.28	10,249
Minority	52.67	35.40	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	55.48	39.96	562
Second	60.23	39.93	505
Third	51.42	34.98	546
Fourth	49.32	40.82	541
Fifth	47.77	39.25	476
Sixth	44.92	36.01	501
Non-Poor			
First	62.38	39.01	2,197
Second	63.27	34.32	1,951
Third	58.82	35.19	1,939
Fourth	55.76	39.94	1,808
Fifth	49.64	37.13	1,844
Sixth	44.57	37.54	2,236
Race and Grade			
Majority			
First	64.09	40.52	2,114
Second	64.34	34.46	1,941
Third	59.54	35.43	1,968
Fourth	55.79	39.72	1,644
Fifth	49.37	37.44	1,826
Sixth	43.01	37.54	2,287
Minority			
First	50.65	32.93	676
Second	56.39	32.77	555
Third	51.25	35.14	561
Fourth	48.97	44.98	540
Fifth	48.76	38.82	537
Sixth	52.78	35.22	512

Table 4-20

Total Hours of Math Instruction in a Class With 14 or More Students by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in a Class With 14 or More Students	77.19	51.77	15,362
Family Economic Status			
Poor/AFDC	75.78	53.07	3,143
Non-Poor	78.08	51.55	11,982
Math Achievement			
Bottom Quarter	72.83	53.20	3,681
Second Quarter	77.37	51.25	3,736
Third Quarter	79.31	51.31	4,009
Top Quarter	80.47	51.27	3,928
Math CE Selection Status			
Title I	71.19	54.33	1,099
Other CE Only	52.81	47.14	1,463
No CE	81.92	51.30	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	73.67	54.15	1,250
Second Quarter	75.99	56.28	906
Third Quarter	77.98	51.03	636
Top Quarter	80.31	56.52	321
Non-Poor			
Bottom Quarter	72.43	52.69	2,365
Second Quarter	77.99	51.33	2,756
Third Quarter	79.57	51.40	3,305
Top Quarter	80.47	50.84	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	70.94	54.71	509
Other CE Only	50.69	46.96	401
No CE	81.38	52.33	2,233
Non-Poor			
Title I	70.42	53.95	576
Other CE Only	53.47	47.37	1,030
No CE	80.94	51.12	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	68.09	52.52	520
Other CE Only	50.86	46.61	486
No CE	77.75	53.38	2,675
Second Quarter			
Title I	74.27	56.09	353
Other CE Only	52.64	43.34	392
No CE	80.98	50.70	2,991
Third Quarter			
Title I	72.37	54.56	170
Other CE Only	54.82	47.60	317
No CE	81.85	50.87	3,522
Top Quarter			
Title I	80.42	58.07	59
Other CE Only	53.11	52.81	255
No CE	82.40	50.50	3,614

Table 4-21

Total Hours of Math Instruction Attended in a Class With 14 or More Students by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in a Class With 14 or More Students	77.19	51.77	15,362
Family Economic Status			
Poor/AFDC	75.78	53.07	3,143
Non-Poor	78.08	51.55	11,982
Race			
Majority	78.55	51.00	11,981
Minority	74.07	54.13	3,395
Grade			
First	73.50	53.00	2,790
Second	73.22	48.16	2,496
Third	76.65	47.53	2,530
Fourth	80.71	51.64	2,384
Fifth	78.15	55.02	2,363
Sixth	83.14	53.72	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	74.59	52.64	1,511
Minority	76.86	53.45	1,605
Non-Poor			
Majority	79.19	50.78	10,249
Minority	71.41	54.71	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	65.82	53.43	562
Second	69.13	47.94	505
Third	74.39	49.90	546
Fourth	84.20	51.84	541
Fifth	85.15	59.52	476
Sixth	76.91	52.89	501
Non-Poor			
First	75.58	53.56	2,197
Second	73.83	48.17	1,951
Third	77.77	46.75	1,939
Fourth	80.10	51.52	1,808
Fifth	76.21	53.63	1,844
Sixth	84.47	54.00	2,236
Race and Grade			
Majority			
First	76.68	53.81	2,114
Second	74.91	48.04	1,941
Third	75.97	46.54	1,968
Fourth	79.51	50.97	1,844
Fifth	77.38	51.71	1,826
Sixth	85.96	53.14	2,287
Minority			
First	63.54	49.06	676
Second	67.34	48.17	555
Third	79.05	50.84	561
Fourth	84.79	53.71	540
Fifth	80.77	65.00	532
Sixth	70.58	54.53	512

No major differences occur when race and grade are analyzed along with family economic status (see Table 4-21). There is some differentiation, though, when the combined effects of race and grade are examined. In grades one and two majority students receive more hours of large group instruction than minority students. In grades three through five, it is the minority students who receive more hours of large group instruction. In grade six the pattern shifts again to the majority race.

Class With 2-13 Students. Each of the independent variables in Table 4-22 differentiates among students and the amount of time spent in a small group instructional setting for math. Poverty, low achievement, and CE selection are all related to above average time spent learning math in classes with 2-13 students. The variance for math achievement and CE selection status militates against these variables being statistically significant in their relationship (see Table B-3 in Appendix B) to small group instruction, but a definite pattern does exist. Were more time overall devoted to math instruction, particularly small group math instruction (as is the case for reading), one would expect these differences to be statistically significant. They follow the same pattern as reading instruction in small groups.

The interaction of poverty and Title I selection, or bottom quarter achievement and Title I, is associated with the largest number of hours (75) in classes with 2-13 students. Basically, for each achievement quarter and CE selection category, poor students spend more time than non-poor students in small group instruction. As achievement level increases for Title I selectees, the time in small classes decreases rapidly. This suggests that while some high achievers are selected for Title I, they do not spend the same amount of time as the low achievers in the small group instructional setting. This pattern does not hold for Other CE selectees. Low achievers spend only a few more hours in small classes than high achievers.

A difference exists in the amount of time white students (28 hours) and minority students (46 hours) spend in small math classes (see Table 4-23). White students further differentiate on family economic status: poor whites attend 38 hours of small group math compared to 26 hours for non-poor whites. This distinction does not occur for minority students.

Grade is not related to small group math instruction. The findings for family economic status and race hold across grade level.

Independent Instructional Setting. As in the case with math learning independently of a teacher, no strong relationships appear between the independent variables in Tables 4-24 and 4-25 and total time spent learning math in an individual instructional setting. Some minor differences do exist, namely, hours vary for poor students according to CE selection status. Those students not selected for Other CE have more hours in an independent setting than those selected for Other CE who, in turn, have more hours of service than Title I selectees. However, the differences are not more than a few hours per group.

Also, across economic status and achievement, Other CE selectees spend about the same number of hours as students not selected for CE in individual instructional settings. Title I selectees spend about 10 hours less in these learning situations.

Table 4-22

Total Hours of Math Instruction in a Class With 2-13 Students by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in a Class With 2-13 Students	31.48	44.48	15,362
Family Economic Status			
Poor/AFDC	43.10	52.12	3,143
Non-Poor	28.82	42.05	11,982
Math Achievement			
Bottom Quarter	41.89	49.09	3,681
Second Quarter	32.99	44.72	3,736
Third Quarter	28.36	42.68	4,009
Top Quarter	24.43	39.96	3,928
Math CE Selection Status			
Title I	68.43	53.98	1,099
Other CE Only	52.30	44.89	1,463
No CE	27.20	41.35	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	49.55	53.28	1,250
Second Quarter	42.78	51.91	906
Third Quarter	36.34	50.32	636
Top Quarter	31.19	47.61	321
Non-Poor			
Bottom Quarter	38.05	46.46	2,365
Second Quarter	29.78	41.78	2,756
Third Quarter	26.82	40.93	3,305
Top Quarter	23.82	39.14	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	75.45	54.27	509
Other CE Only	59.21	41.71	401
No CE	32.83	49.51	2,233
Non-Poor			
Title I	63.58	53.09	576
Other CE Only	49.98	46.60	1,030
No CE	24.79	39.27	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	75.41	53.95	520
Other CE Only	55.76	42.05	486
No CE	32.86	45.77	2,675
Second Quarter			
Title I	70.05	55.69	353
Other CE Only	52.16	43.23	392
No CE	26.10	40.38	2,991
Third Quarter			
Title I	56.45	47.99	170
Other CE Only	50.65	47.34	317
No CE	25.00	40.84	3,522
Top Quarter			
Title I	33.83	39.53	59
Other CE Only	49.22	50.09	255
No CE	22.52	38.55	3,614

Table 4-23

Total Hours of Math Instruction in a Class With 2-13 Students by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in a Class With 2-13 Students	31.48	44.48	15,362
Family Economic Status			
Poor/AFDC	43.10	52.12	3,143
Non-Poor	28.82	42.05	11,982
Race			
Majority	27.71	42.13	11,981
Minority	45.93	49.91	3,395
Grade			
First	28.89	41.33	2,790
Second	30.69	45.56	2,496
Third	30.32	41.29	2,530
Fourth	32.57	44.21	2,384
Fifth	38.75	49.83	2,663
Sixth	29.93	44.69	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	38.18	52.78	1,511
Minority	47.60	51.12	1,605
Non-Poor			
Majority	26.16	40.12	10,249
Minority	44.58	49.06	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	46.39	48.28	562
Second	44.02	62.58	505
Third	41.38	46.59	546
Fourth	37.39	47.29	541
Fifth	47.15	54.74	476
Sixth	42.02	52.41	501
Non-Poor			
First	24.49	38.15	2,197
Second	27.46	39.66	1,951
Third	27.14	39.32	1,939
Fourth	30.75	42.82	1,808
Fifth	36.86	48.39	1,844
Sixth	27.42	42.66	2,236
Race and Grade			
Majority			
First	23.79	39.78	2,114
Second	26.61	41.70	1,941
Third	26.31	38.38	1,986
Fourth	31.02	44.41	1,844
Fifth	32.95	45.23	1,826
Sixth	26.43	42.42	2,287
Minority			
First	44.87	42.01	676
Second	44.95	54.74	555
Third	44.38	47.62	561
Fourth	37.83	43.14	540
Fifth	58.47	58.95	537
Sixth	45.54	50.85	512

Table 4-24

Total Hours of Math Instruction in an Individual Instructional Setting by Family Economic Status, Math Achievement, and Math CE Selection Status (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in Individual Setting	55.41	38.29	15,362
Family Economic Status			
Poor/AFDC	52.61	38.34	3,143
Non-Poor	56.63	38.32	11,982
Math Achievement			
Bottom Quarter	52.68	38.83	3,681
Second Quarter	56.00	38.66	3,736
Third Quarter	57.31	38.55	4,009
Top Quarter	57.25	37.38	3,928
Math CE Selection Status			
Title I	45.77	34.89	1,099
Other CE Only	56.46	35.36	1,463
No CE	56.58	38.79	12,833
Family Economic Status and Math Achievement			
Poor/AFDC			
Bottom Quarter	49.91	38.36	1,250
Second Quarter	54.50	39.37	906
Third Quarter	54.40	38.68	636
Top Quarter	54.91	36.97	321
Non-Poor			
Bottom Quarter	54.15	39.19	2,365
Second Quarter	56.36	38.50	2,756
Third Quarter	57.84	38.42	3,305
Top Quarter	57.48	37.47	3,524
Family Economic Status and Math CE Selection Status			
Poor/AFDC			
Title I	43.84	35.95	509
Other CE Only	51.23	34.70	401
No CE	54.86	39.19	2,233
Non-Poor			
Title I	47.58	33.97	576
Other CE Only	58.68	36.08	1,030
No CE	56.93	38.70	10,376
Math Achievement and Math CE Selection Status			
Bottom Quarter			
Title I	44.31	35.23	520
Other CE Only	56.38	39.61	486
No CE	53.63	39.15	2,675
Second Quarter			
Title I	46.03	35.83	353
Other CE Only	57.08	36.67	392
No CE	57.04	39.08	2,991
Third Quarter			
Title I	48.42	31.14	170
Other CE Only	56.50	32.56	317
No CE	57.81	39.31	3,522
Top Quarter			
Title I	48.00	37.29	59
Other CE Only	57.94	32.87	255
No CE	57.36	37.66	3,614

Table 4-25

Total Hours of Math Instruction in an Individual Instructional Setting by Family Economic Status, Race, and Grade (1976-77)

	Mean	Standard Deviation	N
Total Hours of Math in Individual Setting	55.41	38.29	15,362
Family Economic Status			
Poor/AFDC	52.61	38.34	3,143
Non-Poor	56.63	38.32	11,982
Race			
Majority	56.73	38.91	11,981
Minority	52.69	36.32	3,395
Grade			
First	61.97	39.20	2,790
Second	63.71	35.13	2,496
Third	58.41	35.76	2,530
Fourth	54.98	40.57	2,384
Fifth	50.15	38.00	2,363
Sixth	45.64	37.74	2,799
Family Economic Status and Race			
Poor/AFDC			
Majority	54.32	40.07	1,511
Minority	51.16	36.63	1,605
Non-Poor			
Majority	56.99	38.66	10,249
Minority	54.01	35.65	1,708
Family Economic Status and Grade			
Poor/AFDC			
First	56.79	39.77	562
Second	61.10	34.40	505
Third	52.29	35.41	546
Fourth	50.09	41.73	541
Fifth	48.83	39.98	476
Sixth	46.21	36.27	501
Non-Poor			
First	63.48	39.01	2,197
Second	64.49	35.31	1,951
Third	59.50	35.39	1,939
Fourth	56.49	40.29	1,808
Fifth	50.51	37.25	1,844
Sixth	45.32	38.00	2,236
Race and Grade			
Majority			
First	65.08	40.49	2,114
Second	65.56	35.51	1,941
Third	60.24	35.67	1,968
Fourth	56.43	40.12	1,844
Fifth	50.09	37.66	1,826
Sixth	43.68	38.03	2,282
Minority			
First	52.22	33.04	676
Second	57.27	32.97	555
Third	52.02	35.37	561
Fourth	50.03	41.74	540
Fifth	50.33	39.19	537
Sixth	54.42	35.13	512

There is some differentiation by grade. Time spent in individual learning decreases as grade level increases. In grades one through four, majority students spend more time than minority students in individual learning settings. In grade five they spend about the same amount of time, and in grade six minority students spend nearly 11 hours more learning math apart from other students.

SUMMARY

Are family economic status, achievement, CE selection, race, and grade associated with reading and math instructional settings? Basic differences do exist between the hours of reading and math services received and these variables. In reading there is no basic significant difference between the poor and the non-poor in the hours of instruction from a regular teacher. CE selection status and grade are the primary predictors of hours spent reading with a regular teacher. However, the poor receive more hours of instruction from a non-regular teacher across achievement, CE selection, race, and grade. The non-poor receive more hours than the poor of reading independent of a teacher. So poor students generally are instructed in reading more than non-poor students by a non-regular teacher, and the non-poor in turn spend more time in reading independent of teacher instruction.

Family economic status also is related to the hours spent in reading classes of various size. For Title I selectees and students not selected for any CE, more hours are spent in large group reading instructional settings (14 or more students) by the poor than the non-poor students. The situation is reversed for students selected for Other CE, where children from poor families receive fewer hours in a large group setting. For small group settings (2-13 students) the pattern among Title I and non-CE selectees holds, and the poor receive more hours of service than the non-poor. In this case the poor students selected for Other CE also have more hours of reading in a small group than the non-poor.

Basically, the non-poor have more hours of learning apart from other students than the poor, who receive the bulk of their reading instruction in group settings.

In the area of math instruction the overall effects of the independent variables are not quite as strong as for reading. The poor spend slightly more time learning from a regular teacher than the non-poor, particularly low-income students who are either selected for Title I or not selected for any CE. If poor students are selected for other math CE they receive fewer hours of instruction from a regular teacher than the non-poor in the same category.

In math, as with reading, the poor receive more hours of instruction from a non-regular teacher than the non-poor, particularly if they are CE selectees or low achievers.

No significant difference exists on the basis of family economic status for the hours of math received independent of a teacher and in large instructional groups. However, in the case of instruction in small groups, the poor consistently receive more hours of service than the non-poor, across all CE selection categories, achievement levels, grade, and race. There is no difference in the area of services in an individual setting.

One further observation warrants summary. For both reading and math, Title I selection is associated with above average hours of instruction by a non-regular teacher and a small group setting. Generally, the amount of time spent by Title I selectees in these instructional

circumstances varies by achievement level. Low achievers (below the national mean) spend the most time, high achievers the least. So, while some high achievers are selected for Title I services, the actual amount of services they receive is less than other Title I selectees receive. Actual receipt of services appears to be based more on achievement for these students than on designation for Title I services.

CHAPTER 5. ECONOMIC STATUS, NON-ACADEMIC COMPENSATORY SERVICES, AND EARLY CHILDHOOD EDUCATIONAL EXPERIENCES

This chapter looks at two areas of educational experience in terms of a student's family economic status. In the first part of the chapter data are presented on student receipt of non-academic compensatory services, such as guidance, counseling, health and nutrition. In the second part, early childhood educational experiences such as kindergarten and pre-school are examined.

As indicated in Chapter 1, a significantly large portion of the sample does not have valid data items for some of these variables, so projections to the national population have not been made. Therefore, only sample percentages are supplied. As will be obvious in the tables that follow, a greater proportion of the poor have missing or invalid data items than the non-poor. (It should be remembered that teachers supply these data about their students, and data collected for the *Participation Study* show that students from poor families are more mobile than non-poor students. Thirty-five percent of the poor have lived in their current school neighborhood less than 3 years, compared to 27 percent for the non-poor. Hence, poor students are less well-known to their teachers.) Besides the poor, the proportion of missing data is high for students from homes where English is not spoken regularly, for blacks, for Hispanics, for students in large urban areas, for students from rural areas, and for students in the higher grades. Hence, there may be a bias introduced into the data reported here, and one should be aware of this potential bias in interpreting the results found in this chapter.

NON-ACADEMIC CE

Non-academic compensatory services (guidance, counseling, health and nutrition) are not available to many students. However, the data in Table 5-1 indicate that the poor are more likely to receive such services than the non-poor. This is particularly true in the area of health and nutrition, where 12 percent of the poor students have received such services. Since there is no information available on another 5 percent of the students from low-income families, the actual incidence of receipt may be greater.

The pattern that poor students are more likely than non-poor students to receive these non-academic CE services holds across grade and race. When reading and math achievement are introduced into the analysis (see Table 5-2), some deviations from the pattern occur. Those groups with the highest percent of guidance and counseling services are the non-poor who achieve in the bottom quarter in reading (5.6 percent receive guidance and counseling CE) and the non-poor who achieve in the bottom quarter in math (4.8%). Regardless of family economic status and subject, the percentage of students receiving guidance and counseling declines as achievement level rises, as does the percentage of missing or invalid data.

The relationship of achievement for guidance and counseling is not as strong for health and nutrition in comparison to the relationship of poverty. Generally, receipt of health and

Table 5-1

Receipt of Non-Academic Compensatory Services by Family Economic Status

Type of Service and Economic Status	Receipt of Services: Yes (%)	No (%)	Missing* (%)
Guidance and Counseling			
Poor/AFDC	3.3	91.3	5.3
Non-Poor	2.5	94.6	2.9
Health and Nutrition			
Poor/AFDC	12.4	82.4	5.2
Non-Poor	2.8	94.4	2.9

*The term "missing" in this and subsequent tables in this chapter includes both the lack of valid data and invalid data such as multiple scored data items.

nutrition services decrease as achievement level increases, but in all cases the lowest percentage of poor students receiving services (poor, top quarter in both reading and math) is greater than the highest percentage of non-poor students in any category.

Table 5-3 presents data that introduce CE selection status into the analysis. The influence of poverty is maintained across selection categories. Regardless of economic status or subject, Other CE selectees have the greatest percentage receiving guidance and counseling CE services. Title I selectees, whether poor or not, have the highest percentage of students where missing or invalid data appear. Hence, the deviation in guidance and counseling services received, by Title I and Other CE selectees, may be somewhat related to the reporting process.

The same pattern holds for health and nutritional services of a compensatory nature. The greatest impact of receipt of services is among poor Title I and Other CE selectees, regardless of subject. Between 21 percent and 25 percent of these students are designated for health and nutritional services.

EARLY CHILDHOOD EXPERIENCES

The data in Table 5-4 are focused on early childhood experiences. In this table the three experiences where exposure is greater for non-poor students than poor students are presented. Most children attend kindergarten, but a greater proportion of non-poor (87%) attend than poor (74%). Again, more students from poor families than those from non-poor backgrounds have missing or invalid records — but not enough to make up for the gap between the two groups in exposure to kindergarten. The data also show that more non-poor children experience early childhood services like nursery school, day care centers, and preschool programs.

Table 5-2

Receipt of Non-Academic Compensatory Services
by Achievement, Controlling for Family Economic Status

Family Economic Status and Achievement or CE Status	Guidance and Counseling			Health and Nutrition		
	Yes (%)	No (%)	Missing (%)	Yes (%)	No (%)	Missing (%)
Poor/AFDC						
Reading Achievement						
Bottom Quarter	3.8	89.8	6.4	14.8	78.8	6.5
Second Quarter	3.2	91.1	5.7	13.4	81.2	5.4
Third Quarter	2.7	94.8	2.5	7.8	89.5	2.6
Top Quarter	2.5	94.7	2.9	6.5	91.0	2.5
Non-Poor						
Reading Achievement						
Bottom Quarter	5.6	89.1	5.2	6.3	88.4	5.3
Second Quarter	2.2	94.6	3.2	3.1	93.6	3.3
Third Quarter	1.9	95.9	2.1	2.1	95.8	2.1
Top Quarter	1.3	97.3	1.4	0.8	98.0	1.2
Poor/AFDC						
Math Achievement						
Bottom Quarter	4.2	88.8	7.0	14.8	78.8	7.0
Second Quarter	3.0	92.4	4.6	12.7	82.6	4.6
Third Quarter	2.1	95.0	2.9	10.1	87.5	2.4
Top Quarter	2.5	94.3	3.2	5.9	90.9	3.2
Non-Poor						
Math Achievement						
Bottom Quarter	4.8	89.5	5.6	4.8	89.5	5.7
Second Quarter	3.1	93.7	3.2	3.7	93.0	3.2
Third Quarter	1.8	96.0	2.2	2.2	95.5	2.3
Top Quarter	1.2	97.7	1.1	1.2	97.9	0.9

Table 5-3

Receipt of Non-Academic Compensatory Services
by CE Selection Status, Controlling for Family Economic Status

Family Economic Status and CE Selection Status	Guidance and Counseling Yes (%)	Guidance and Counseling No (%)	Guidance and Counseling Missing (%)	Health and Nutrition Yes (%)	Health and Nutrition No (%)	Health and Nutrition Missing (%)
Poor/AFDC						
Reading CE Selection						
Title I	3.2	86.7	10.1	21.0	69.6	9.4
Other CE Only	8.6	87.4	4.0	24.7	71.0	4.3
No CE	2.2	94.2	3.6	6.0	90.3	3.7
Non-Poor						
Reading CE Selection						
Title I	2.9	88.8	8.3	6.4	85.7	7.9
Other CE Only	5.3	90.3	4.5	9.0	86.3	4.6
No CE	2.1	95.8	2.0	1.6	96.4	2.0
Poor/AFDC						
Math CE Selection						
Title I	5.0	86.1	8.9	24.3	67.8	7.9
Other CE Only	8.2	86.2	5.6	25.1	68.8	6.1
No CE	2.1	93.4	4.4	7.4	88.1	4.5
Non-Poor						
Math CE Selection						
Title I	3.9	87.8	8.4	9.1	83.3	7.6
Other CE Only	4.2	92.8	2.9	9.8	87.2	3.0
No CE	2.3	95.2	2.6	1.7	95.7	2.6

Table 5-5 presents data revealing that more poor students than non-poor have experienced Head Start programs and pre-primary Summer School. There is a particularly large gap between the two groups in the area of Head Start.

In Table 5-6 a composite variable taking into account all these early childhood experiences is presented. This early childhood exposure variable indicates whether a child has received any of the pre-primary experiences mentioned previously. Eight out of ten poor students are exposed to at least one pre-primary education experience. Nine out of ten non-poor are so exposed. More poor than non-poor do not receive these experiences or have no information available in this regard.

Table 5-4

Kindergarten, Nursery School or Day Care, and
Pre-School Exposure by Family Economic Status

Type of Exposure and Economic Status	Exposure Yes (%)	No (%)	Missing (%)
Kindergarten			
Poor/AFDC	73.8	22.4	3.8
Non-Poor	87.4	10.7	1.8
Nursery School or Day Care			
Poor/AFDC	6.9	83.5	9.6
Non-Poor	11.5	81.2	7.3
Pre-School			
Poor/AFDC	5.1	85.0	9.9
Non-Poor	9.1	83.4	7.5

The question arises as to how this early childhood educational experience might affect achievement and selection for CE. Table 5-7 presents data indicating that early childhood exposure is related to achievement. Contrasted with those exposed to pre-primary experiences, those non-exposed are more often located in the bottom quarter than in the top.

The data in Table 5-8 show that the lack of early childhood educational experiences is related to selection for Title I reading or math programs. Almost twice as many students with no pre-primary exposure (20 percent for reading and 12 percent for math) as those with pre-primary exposure (12 percent for reading and 7 percent for math) are selected for Title I programs. This relationship does not hold for Other CE selectees. The control for family economic status indicates that, for each early childhood exposure category, poor students are more likely than non-poor students to be selected for Title I, and generally for Other CE. Controlling for family economic status also indicates that the relationship between the lack of early childhood exposure and selection for Title I programs is more pronounced among the poor.

SUMMARY

More poor than non-poor are exposed to non-academic compensatory services, particularly health and nutrition. A greater proportion of non-poor are exposed to early childhood experiences, particularly kindergarten. Still, in the areas of Head Start and Summer School, poor children receive experiences to a greater degree than the non-poor. The lack of early childhood experience is associated with low achievement, particularly for the poor. This deficiency in pre-primary educational settings is also associated with selection to Title I, again particularly for the poor.

Table 5-5

Head Start and Summer School Exposure
by Family Economic Status

Type of Exposure and Economic Status	Exposure		
	Yes (%)	No (%)	Missing (%)
Head Start			
Poor/AFDC	14.4	76.5	9.1
Non-Poor	4.6	88.4	7.0
Summer School			
Poor/AFDC	7.9	82.4	9.7
Non-Poor	4.4	88.5	7.1

Table 5-6

Early Childhood Exposure
by Family Economic Status

Family Economic Status	Early Childhood Exposure		
	Yes (%)	No (%)	Missing (%)
Poor/AFDC	80.9	16.0	3.1
Non-Poor	90.2	8.0	1.8

Table 5-7

Reading and Math Achievement by
Early Childhood Exposure, Controlling
for Family Economic Status

Early Childhood Exposure and Family Economic Status	Reading Achievement: Bottom Quarter (%)	Reading Achievement: Second Quarter (%)	Reading Achievement: Third Quarter (%)	Reading Achievement: Top Quarter (%)	Math Achievement: Bottom Quarter (%)	Math Achievement: Second Quarter (%)	Math Achievement: Third Quarter (%)	Math Achievement: Top Quarter (%)
Early Childhood Exposure								
Yes (N=13,692)	22.6	25.3	26.0	26.1	22.6	24.2	26.5	26.7
No (N=1,501)	36.6	29.8	19.7	13.9	35.3	25.7	23.4	15.5
Missing (N=315)	37.6	21.9	21.2	19.3	35.0	23.8	22.2	19.1
Poor/AFDC								
Early Childhood Exposure								
Yes (N=2,564)	40.4	30.5	18.9	10.2	38.4	30.2	20.4	11.0
No (N=505)	51.3	32.3	11.1	5.3	47.9	23.4	22.0	10.4
Missing (N=94)	58.0	21.7	10.3	10.0	50.7	25.3	13.8	10.2
Non-Poor								
Early Childhood Exposure								
Yes (N=10,873)	18.5	24.1	27.7	29.8	18.9	22.8	28.0	30.4
No (N=964)	28.7	28.8	24.2	18.4	29.2	26.9	23.9	19.9
Missing (N=213)	27.5	22.1	26.7	23.7	28.0	22.6	26.5	23.0

Table 5-8

Reading and Math CE Selection Status
by Early Childhood Exposure, Controlling
for Family Economic Status

Early Childhood Exposure and Family Economic Status	Reading Selection Status			Math Selection Status		
	Title I (%)	Other CE Only (%)	No CE (%)	Title I (%)	Other CE Only (%)	No CE (%)
Early Childhood Exposure						
Yes (N=13,692)	11.9	11.0	77.1	6.6	9.7	83.7
No (N=1,501)	20.4	9.1	70.6	11.5	7.2	81.3
Missing (N=315)	16.0	12.8	71.3	10.9	10.8	78.3
Poor/AFDC						
Early Childhood Exposure						
Yes (N=2,564)	23.8	14.5	61.7	15.0	13.5	71.5
No (N=505)	34.1	8.9	57.0	20.6	8.0	71.4
Missing (N=94)	23.5	16.1	60.4	20.3	14.7	65.0
Non-Poor						
Early Childhood Experience						
Yes (N=10,873)	9.1	10.1	80.9	4.6	8.8	86.6
No (N=964)	13.1	9.2	7.7	6.8	6.8	86.3
Missing (N=213)	11.6	10.0	78.4	6.9	8.1	85.0

CHAPTER 6. THE PARTICIPATION STUDY

This report and the previously published *Students' Economic and Educational Status and Selection for Compensatory Education* (Breglio, Hinckley and Beal, 1978) are intended complements of one another. These two reports accomplish the principal designs of *The Participation Study*. Technical Report #2 estimates the proportions of economically and educationally needy students who receive compensatory services, and Technical Report #3 presents a detailed description of the nature of educational programs in the basic skill areas offered to economically and educationally needy students, and contrasts those selected for compensatory services with those receiving regular classroom activities. These are two of the major objectives outlined in the *Study of the Sustaining Effects of Compensatory Education on Cognitive Skills.*

Title I of the Elementary and Secondary Education Act authorized the Federal Government to join hands with State and local education agencies in a partnership designed to enhance the education of educationally needy children in areas with concentrations of children from low-income families. The fundamental idea behind *The Participation Study* has been to present a reasonably complete picture of students' family economic status, measured in terms of the Title I allocation criteria, and compensatory education. The principal contribution of this study is the linkage of an exact measurement of family economic status at the student level, via an in-home survey, with educational performance and educational services in the schools, and to examine the relationship between them. *The Participation Study*, and these reports, form a small but fundamental part of the national commitment to evaluate and upgrade the education of the poor. Taken together these reports attempt to describe the impact of poverty on education, as well as the impact of compensatory education on the poor among the nation's elementary school children in grades one through six. Very simply, these reports are about poverty and education.

The evaluation of compensatory education, of Title I, or of other educational programs for the poor is certainly not new; *The Participation Study* shares with many other evaluation studies the national concern for educational opportunities for children of the poor. In Technical Reports #2 and #3 the unit of analysis is the individual student, rather than the school or other agencies. Family background and environment data were generated from in-person interviews with more than 14,000 parents of elementary school children, selected so as to produce a nationally representative sample. The original study design prepared by the U.S. Office of Education envisioned the importance of collecting family economic data and other salient family environmental factors directly from parents, rather than accepting surrogate information provided by teachers or school administrators. This approach has been substantiated by subsequent analyses of the data that show substantial differences between individual level economic measures and student achievement, and school level economic measures and school mean achievement (Breglio, Hinckley and Beal, 1978, p. 44), and the inability to predict with accuracy from surrogate teacher information to family economic status as reported directly by parents (Moskowitz and Hoepfner, 1978).

The thrust of the first two technical reports is the Congressional concern for the interrelationship between family economic status, student achievement, and participation in CE.

This concern is based upon the three major criticisms of the Title I program, namely that: (1) the method of allocating funds is unrealistic or inequitable, (2) the program reaches too few students, or the wrong students, and (3) the flow of funds is difficult to trace to the actual classroom programs and, thus, the evaluation efforts have been unsatisfying (Emrick, 1974). *The Participation Study* supplies data that have never been available previously in CE evaluation efforts, responding, in part, to these criticisms. The primary research inquiry of *The Participation Study* is to determine if family economic status singly, or in combination with other variables, is related to student (1) achievement, (2) selection for CE, (3) school attendance, (4) and to the amount of reading and math instruction offered and received, (5) alternate instructional settings, (6) early childhood and non-academic educational experiences, and (7) the alternate sources of CE funding. The research questions for the two reports that appear in Table 6-1 overview the research objectives and suggest the policy import of *The Participation Study*.

The first four questions in Technical Report #2 deal with the proportions of economically and educationally needy students who are selected for compensatory services. No distinction is made between reading and math programs in these questions or in the report, but rather a composite look is taken of a combined reading and math achievement score and selection for reading and/or math compensatory programs. Because interest was expressed in differentiating between reading and math, the first question in Technical Report #3 was designed to address each of the issues discussed in Technical Report #2, but from the standpoints of reading and math separately. Consequently, data reported on in Chapter 2 of the third technical report supplements data presented in Chapters 2-5 in the second report.

Questions 3.2, 3.3, and 3.4 in Technical Report #3 deal with the actual receipt of educational services. Distinctions are made between reading and math for questions 3.2 and 3.3. Question 3.4 covers educational programs outside the basic skill areas. Finally, the last research question for Technical Report #2 (2.5) deals with possible alternate definitions of economic status and educational status, and their relationships to actual CE selection rates.

The findings, appropriate qualifications, and possible implications are summarized in the following encapsulated form.

RESEARCH QUESTION 2.1. HOW DOES THE STUDENT'S ECONOMIC STATUS DIFFERENTIATE BETWEEN STUDENTS SELECTED AND *NOT* SELECTED FOR TITLE I AND OTHER CE SERVICES?

Findings. On a proportional basis CE selection is higher among the poor than among the non-poor. Students from poor family backgrounds tend to be selected for Title I programs at a greater rate than for Other CE services. Students from non-poor families are selected on a more equal basis for Title I and Other CE programs. Still, a majority of the poor and non-poor CE participants are in Title I programs.

Even though the rate of CE selection is higher among the poor, more than half of all poor students are not selected to receive any compensatory service in reading or math. All but a small percentage of these students are in schools that receive CE funds. Despite the higher proportionate rate of CE selection among the poor, more non-poor students are selected for

Table 6-1

Complementary Research Questions
for the Participation Study
(SES Technical Reports #2 and #3)

Technical Report #2	Technical Report #3
2.1 How does the student's economic status differentiate between students selected and not selected for Title I and other CE services? (Chapter II)	
2.2 How does the student's educational status differentiate between students selected and not selected for Title I and other CE services? Chapter III)	
2.3 What is the relationship between student's economic status and educational status? (Chapter IV)	
2.4 How do the combined measures of economic and educational status differentiate between students selected and not selected for Title I and other CE services? (Chapter V)	3.1 How do the measures of economic status and educational achievement differentiate between students selected and not selected for Title I and other CE reading or math services? (Chapter 2)
	3.2 How are student economic status and student educational status associated with school attendance, hours of reading and math services offered a student during the year, and hours of reading and math instruction attended during the year? (Chapter 3)
	3.3 Are student economic status and student educational status associated with reading or math instructional settings in terms of the type of teacher or size of instructional group? (Chapter 4)
	3.4 Is student economic status associated with the kinds of early childhood educational services experienced? Is student economic status associated with the receipt of non-academic compensatory services? (Chapter 5)
2.5 What changes in the Title I and other CE selection rates occur when certain alternative measures of economic and educational status are used? (Chapter VI)	

CE services; nevertheless, the clear majority of non-poor students are not selected for any form of CE.

Implications. To the extent that Title I is designed to provide services to children from low-income families, these data suggest that it has, with partial success, satisfied its intended purpose. Twice the percentage of poor children are Title I participants as are members of the population as a whole. However, this participation rate means less than one-third of all poor children are Title I selectees. On the other hand, Title I is more successful than Other CE programs in serving poor children. While it has been argued that a principal purpose of Title I is to assist the poor, it has not been suggested that it is designed to exclude non-poor students. Therefore, it would be misleading at this juncture to conclude that Title I serves the wrong children even though a majority of Title I selectees are non-poor.

RESEARCH QUESTION 2.2. HOW DOES THE STUDENT'S EDUCATIONAL STATUS DIFFERENTIATE BETWEEN STUDENTS SELECTED AND *NOT* SELECTED FOR TITLE I AND OTHER CE SERVICES?

Findings. CE selection rates are highest for low achievers. A small controversy exists over the definition of low achievers. The Congressional mandate for *The Participation Study* called for low achievement to be defined in terms of one year or more below grade level. Under this definition regular achievers outnumber low achievers by more than three to one, and more regular-achieving than low-achieving students are selected for Title I and Other CE services. However, this definition has a grade level bias (fewer students in the lower grades than in the upper grades are one year or more below grade level) and gives a distorted picture to CE selection rates in terms of educational status. The selection rates differ little when low achievement is defined in terms of the bottom quarter of the achievement percentile distribution. However, the percentile measure of educational status suggests that many regular achievers selected for CE score below the national median. Further, when the national median is used as the definition of low achievement, more low achievers are selected for CE than regular achievers. Still, the largest proportion of low achievers under any of these definitions of low achievement is not selected for any CE services.

Implications. To the extent that Title I is designed to provide services to low-achieving children these data suggest that it has met with partial success. A large proportion of low achievers under any of the definitions of low achievement are selected for participation in Title I, and most Title I selectees achieve below the national median. However, fewer than one in four students below the national median participate in Title I. On the other hand Title I is more successful than Other CE programs in differentiating between those selected and not selected on the basis of achievement. Insofar as Title I is designed to assist low-achieving students to the exclusion of regular-achieving students (where low-achievement means scoring below the national median), Title I does not serve the wrong children.

RESEARCH QUESTION 2.3. WHAT IS THE RELATIONSHIP BETWEEN STUDENTS' ECONOMIC STATUS AND EDUCATIONAL STATUS?

Findings. Children from impoverished family circumstances are likely to be low achieving: most of the students from low-income families achieve below the national median. However, the relationship between total family income and student achievement is not a simple linear one; a third degree polynomial equation (cubic) adds to the percent of variance

accounted for, more accurately describing the relationship. Still, at the individual level the correlation is weak and the amount of explained variance is small. However, the grouped correlation between the mean income for students at the school level and the mean percentile score for these same students at the school level is substantially higher than the individual level correlations.

Implications. A central assumption of compensatory education, particularly Title I, is that family economic conditions significantly influence student educational achievement, and these data suggest that this assumption is correct. Where one finds poverty, one finds low-achieving students at a proportionate rate. Whether or not the purpose of Title I is to serve poor children or low-achieving children, the current method of allocating funds by counts of low-income students should reach both the poor and low-achieving because they frequently are the same student.

RESEARCH QUESTION 2.4. HOW DO THE COMBINED MEASURES OF ECONOMIC AND EDUCATIONAL STATUS DIFFERENTIATE BETWEEN STUDENTS SELECTED AND *NOT* SELECTED FOR TITLE I AND OTHER CE SERVICES?

Findings. Students with the highest selection rate for Title I and Other CE are both economically and educationally needy. The group with the lowest proportion of selectees is neither economically nor educationally needy.

Those who are low-achieving but not poor are selected for CE at a higher rate than those who are poor but not low-achieving. Even though a large proportion of the poor who achieve in the bottom quarter are selected for Title I, and a smaller percentage are designated for Other CE services, nearly half do not participate in any CE program, and most of these students are in schools that do receive CE funds.

Implications. To the extent that Title I is designed to provide services to low-achieving children from poor homes, these data suggest that it has met with partial success. Of all students, three times as many Title I students are poor and achieve in the bottom quarter of the percentile achievement distribution. However, this proportion represents less than half of all the children in this category, and the proportion not receiving services grows if the national median replaces the 25th percentile as the low achievement cut-off point. In this sense then, it can be inferred that Title I reaches too few students, and one of the criticisms Emrick (1974) pointed out appears to be valid. There is little indication that Title I serves significantly large numbers of the wrong students to the exclusion of low-achieving students. If those Title I participants who achieve above the national median were to be replaced on a one for one basis by non-participants who are below the national median, less than 20 percent of the current low-achieving non-participants would be able to be selected for service. This indicates that efforts should be oriented towards how Title I can reach more needy, low-achieving students.

RESEARCH QUESTION 3.1. HOW DO THE MEASURES OF ECONOMIC STATUS AND EDUCATIONAL ACHIEVEMENT DIFFERENTIATE BETWEEN STUDENTS SELECTED AND *NOT* SELECTED FOR TITLE I AND OTHER CE READING OR MATH SERVICES?

Findings. The findings for questions 2.1 through 2.4 hold when reading and math are examined separately. On a proportional basis CE selection, particularly Title I selection, is higher among the poor than the non-poor. CE selection rates are highest for low achievers. Students from impoverished family circumstances are likely to be low achieving, and students with the highest selection rates for Title I and Other CE reading and math programs are both economically and educationally needy. Conversely those with the lowest participation rates are neither economically nor educationally needy. The basic difference between reading and math is that about twice as many students are selected for reading services as are selected for math.

There are two other salient findings. Teacher judgment of CE need plays an important role in selection for CE. Within economic or achievement groupings, those judged needy by their teacher are more likely to be selected for CE than those judged as not needy. Finally, some of those Title I selectees, whose high score on the national achievement scale seems to make them unlikely CE participants, are from subgroups where Title I regulations would still permit them to be included in the programs. This is, they are from subgroups who consistently achieve above the national median, but they may actually achieve 'below average' in their particular class or school. Other high-achieving Title I selectees may come from schools where, due to a small enrollment, everyone in the school is selected for service regardless of achievement.

Although the rates of participation for both Title I reading and math are highest for those subgroups in the population who are the intended targets of the Title I legislation (the poor, the low-achieving, and both), and the participation rates are better than for Other CE programs, most students in these subgroups are not participants in Title I programs. However under some definitions of low achievement, it appears that more intended students than non-intended students are participants. This is not true when the national median is employed as the cut-off point for low achievement. (This most closely approximates the Title I regulation that eligible students are those students living in an attendance area receiving Title I funds who achieve 'below average'.)

Implications. Title I is apparently reaching the intended students – just not enough of them. Means should be devised to reach more of these students. Since teacher judgment of CE need plays such an important role in the selection for Title I participation, efforts might be made to make them more aware of the specific qualifications that should lead to Title I participation. Other aspects of Title I selection and funding procedures should also be carefully analyzed.

RESEARCH QUESTION 3.2. HOW ARE STUDENT ECONOMIC STATUS AND STUDENT EDUCATIONAL STATUS ASSOCIATED WITH SCHOOL ATTENDANCE, HOURS OF READING AND MATH SERVICES *OFFERED* A STUDENT DURING THE YEAR, AND HOURS OF READING AND MATH INSTRUCTION *ATTENDED* DURING THE YEAR?

Findings. Poverty has a significant relationship with the amount of time children spend in school; students from impoverished homes attend less school than other students. Poor students are offered more hours of reading and math than non-poor students. Because of the

low attendance among poor students they do not differ significantly from non-poor students in terms of the amount of reading and math instruction actually attended.

The total hours of reading and math services offered is also highly related to grade, achievement and CE selection. Within these groupings the poor are generally offered more hours of service than the non-poor, but the hours of service offered to the poor decrease when the grade level increases, when achievement increases, and when students are not selected for CE. Grade, race, and selection for CE account for more of the differences in reading services actually received than does family economic status. Title I selectees attend more hours of reading and math instruction, but as grade increases the number of reading hours attended drops sharply, the number of math hours slightly, and minority students in the later grades attend more hours of reading than majority students in these grades.

Implications. These findings suggest that selection for CE, particularly Title I, is associated with more hours of instruction being offered in the basic skills of reading and math, and that the poor are in a position to benefit from this. However, since the poor attend less school than the non-poor, the actual amount of basic skills instruction they receive is not much different from the non-poor. Therefore, in terms of hours of service, Title I tends to make up for what poor students would otherwise miss instead of providing them with more services that might help compensate for the effects of their economic background. Thus, it seems that poverty has an intricate association with education, and those who pursue efforts to compensate for the educational deprivation of the poor must bear in mind the complex manner in which poverty is related to learning.

RESEARCH QUESTION 3.3. ARE STUDENT ECONOMIC STATUS AND STUDENT EDUCATIONAL STATUS ASSOCIATED WITH READING OR MATH INSTRUCTIONAL SETTINGS IN TERMS OF THE TYPE OF TEACHER OR SIZE OF INSTRUCTIONAL GROUP?

Findings. In reading, family economic status is unrelated to the number of hours of instruction from a regular teacher. The poor receive more hours of instruction from a non-regular teacher across achievement level, CE selection status, race, and grade. The non-poor spend more hours of reading independent of a teacher. The combination of poverty and selection for Title I is related to more hours being spent in a class with 14 or more students. This pattern holds for small classes with only 2 to 13 students. The bulk of reading done by the non-poor occurs in individual settings.

In the area of math instruction, the effects of family economic status are not quite as strong as for reading. The poor do spend slightly more time with a regular teacher than the non-poor, particularly if they are Title I selectees. They also spend slightly more time with non-regular teachers than the non-poor, but no significant difference exists on the basis of family economic status for the hours of math instruction received independent of a teacher or in a large instructional group. However, in the case of instruction in small groups, the poor consistently receive more hours of service than the non-poor, across all CE selection categories, achievement levels, grades, and races.

The relationships found for poverty are often due to the correlation between poverty and selection for Title I. It is selection for CE that is the basic determinant of hours spent with various types of teachers and in different instructional settings. The focus of Title I selection for both reading and math seems to be an above average number of hours of instruction by a non-regular teacher in small group settings. The amount of time spent by Title I selectees in these circumstances varies by achievement level. Those below the national median spend the most time in these circumstances, high achievers the least – indicating that, while some high achievers are selected for Title I services, the actual amount of compensatory services they receive is more comparable to other high achievers than to other Title I selectees

Implications. Not only are more hours of basic skills instruction offered to the poor through Title I, but different instructional settings are made available to them. Thus it is possible to link individual students, their economic status and their achievement to CE programs and to the hours and types of services made available to them. This linkage permits one to conclude that Title I and Other CE recipients are receiving different services (to a certain extent) than those students who only participate in regular classroom programs. And by an examination of these programs, it is possible to determine that those students who are selected for Title I, but whose achievement level seems to make them unintended recipients, do not receive the same services as the intended recipients.

RESEARCH QUESTION 3.4. IS STUDENT ECONOMIC STATUS ASSOCIATED WITH THE KINDS OF EARLY CHILDHOOD EDUCATIONAL SERVICES EXPERIENCED? IS STUDENT ECONOMIC STATUS ASSOCIATED WITH THE RECEIPT OF NON-ACADEMIC COMPENSATORY SERVICES?

Findings. More poor than non-poor are exposed to non-academic compensatory services, particularly health and nutrition. A greater proportion of the non-poor are exposed to early childhood educational experiences, particularly kindergarten.

In the early childhood educational areas of Head Start and pre-primary Summer School, more poor children participate than non-poor. The lack of early childhood experiences is associated with low achievement, particularly for the poor, and it is associated with selection to Title I.

Implications. Those students most likely to be selected for Title I are not only poor, but are less likely to participate in early childhood educational programs, and more likely to be singled out for guidance, counseling, health and nutrition services than other students. The deprivation associated with poverty goes beyond achievement and attendance into other educational areas, and many of these poor students become Title I participants. Whether or not the programs funded by Title I and Other CE sources can enhance the educational performance of the disadvantaged is not answerable through these data, but the programs, particularly Title I, are including the most needy in many senses of the term.

RESEARCH QUESTION 2.5. WHAT CHANGES IN THE TITLE I AND OTHER CE SELECTION RATES OCCUR WHEN CERTAIN ALTERNATIVE MEASURES OF ECONOMIC AND EDUCATIONAL STATUS ARE USED?

Findings. Proposed alterations in the educational and economic criteria expand the number of students who would become targeted for CE. Because poverty and low achievement are related, an expansion of the definition of either group automatically includes large numbers of the other category of children. However, because there are more low-achieving than poor students in absolute numbers, altering the allocation criteria to one based on performance would dilute the focus on poor children. Finally, the broader the definitions of economic and educational need, the more the needy population resembles the whole universe of elementary school students in grades one through six.

Implications. The current definitions of the economically needy (students who would be counted under the Title I allocation criteria) and the educationally needy (those who achieve 'below average' or who are achieving below the national median) encompasses the most needy students. Insufficient numbers of these students are receiving Title I and Other CE services; therefore, it would be counterproductive to broaden the definitions which would enlarge the pool of targeted children until more of those currently targeted actually receive services.

SUMMARY

The Participation Study ascertains the proportion of economically and educationally needy students who receive compensatory services. It presents a detailed description of the nature of programs in the basic skill areas, and some peripheral ones as well, which are being offered to economically and educationally needy students, and contrasts those selected for compensatory education with those receiving regular classroom instruction. In so doing it provides information to respond to some of the major criticisms of Title I.

While not dealing directly with the method of allocating Title I funds, *The Participation Study* does provide evidence that those students counted under the current allocation method are the most likely to receive services. This does not touch upon whether or not the allocation procedure is unrealistic, but it does indicate that the only inequity in the system is that which was built in, namely that those students who are low-achieving and live in areas with high concentrations of low-income students are the most needy and should receive compensatory services.

Second, there is evidence that the program reaches too few students. Under any of the alternative definitions of poverty and low achievement more students are not selected for services than are selected for participation. However, the data generated by *The Participation Study* do not indicate that the wrong students are participating in the program. Also, the relatively few wrong students who are selected do not receive the same services as the intended participants.

Third, *The Participation Study* successfully links information about Title I and Other CE programs gathered in students' homes, in students' classrooms, in students' school administrative offices, and in local education agencies. Thus, while it might be difficult to trace Title I to the actual classroom programs, it is not impossible, nor unsatisfying. The success of *The Participation Study* in evaluating Title I and in providing responses to some of the major criticisms of the program should "whet the appetite" of Members of Congress, educa-

tors, policy administrators, and concerned citizens for the reports emanating from the other parts of the SES, namely: *The Longitudinal Study, The Cost/Effectiveness Study, and The Successful Sites Study.* These reports will further respond to the major criticisms of Title I and address the principal federal compensatory education policy issues.

APPENDIX A. ANALYSES-OF-VARIANCE FOR CHAPTER 3

These analyses-of-variance were performed to assist the authors in examining the impact of one of the principal independent variables, family economic status, on the amount of educational services offered and attended both singly and in conjunction with other independent variables. Explanation of contributing factors to the amount of educational services provided students was not the goal of these analyses. It is recognized that correlated student attributes such as economic status, CE selection status, etc., constitute the principal independent variables for the study. Such attributes used in a fixed effects model will seldom yield a true picture of variance accounted for in the dependent variable by a particular combination of attributes. Even though the analysis-of-variance is a robust statistical test, the significant F-ratios in the following tables should be interpreted with caution because of the generally small percent of variance accounted for and the large sample size.

The degrees of freedom for the residual vary slightly from model to model due to missing values for some of the cases. The categories for each of the independent variables are identical to those presented in the report: for family economic status they are Poor/AFDC and Non-Poor; for reading and math achievement they are Bottom Quarter, Second Quarter, Third Quarter and Top Quarter; for reading and math CE selection status they are Title I, Other CE Only, No CE; for race, they are Majority and Minority; and, for grade, one through six.

Table A-1

Analyses-of-Variance of Attendance by Family Economic Status, Achievement, CE Selection Status, Race, and Grade (1976-77)

Attendance Effects	df	Mean Square	F-ratio	Percent of Variance Accounted For	
Family Economic Status, Reading Achievement, and Reading CE Selection Status					
Family Economic Status (FES)	1	1,570.13	263.83**	1.67	
Reading Achievement (RA)	3	127.40	21.41**	0.41	
Reading CE Selection (RCE)	2	139.61	23.46**	0.30	
FES x RA	3	38.65	6.49**	0.12	
RES x RCE	2	189.69	31.91**	0.40	
RA x RCE	6	11.67	1.96	0.07	
FES x RA x RCE	6	11.53	1.94	0.07	
Residual	15,052	5.95			
Total Percent of Variance Accounted for by the Model					4.52
Family Economic Status, Math Achievement, and Math CE Selection Status					
Family Economic Status (FES)	1	1,573.51	265.39**	1.69	
Math Achievement (MA)	3	162.93	27.48**	0.52	
Math CE Selection (MCE)	2	185.00	31.20**	0.40	
FES x MA	3	11.65	1.94	0.04	
FES x MCE	2	81.13	13.68**	0.17	
MA x MCE	6	4.94	0.83	0.03	
FES x MA x MCE	6	41.62	7.02**	0.27	
Residual	15,039	5.92			
Total Percent of Variance Accounted for by the Model					4.41
Family Economic Status, Race and Grade					
Family Economic Status (FES)	1	2,503.37	410.09**	2.62	
Race	1	144.65	23.70**	0.15	
Grade	5	123.81	20.28**	0.65	
FES x Race	1	45.30	7.42**	0.05	
FES x Grade	5	14.34	2.35*	0.08	
Race x Grade	5	31.65	5.18**	1.48	
FES x Race x Grade	5	24.28	3.98**	0.08	
Residual	15,049	6.10			
Total Percent of Variance Accounted for by the Model					3.70

**Significance at the 0.01 level
*Significance at the 0.05 level

Table A-2

Analyses-of-Variance of Total Hours of Reading Offered by Family Economic Status, Reading Achievement, Reading CE Selection Status, Race, and Grade (1976-77)

Reading Offered Effects	df	Mean Square	F-ratio	Percent of Variance Accounted For	
Family Economic Status, Reading Achievement, and Reading CE Selection Status					
Family Economic Status (FES)	1	83,370.41	8.67**	0.06	
Reading Achievement (RA)	3	59,524.08	6.19**	0.12	
Reading CE Selection (RCE)	2	897,272.93	93.28**	1.21	
FES x RA	3	22,369.31	2.33	0.05	
FES x RCE	2	62,701.11	6.52**	0.08	
RA x RCE	6	22,253.90	2.31	0.09	
FES x RA x RCE	6	18,647.87	1.94	0.08	
Residual	15,050	9,619.46			
Total Percent of Variance Accounted for by the Model					2.28
Family Economic Status, Race and Grade					
Family Economic Status (FES)	1	317,202.24	47.10**	2.15	
Race	1	25,660.44	3.80*	0.17	
Grade	5	8,508,953.50	1,263.34**	28.82	
FES x Race	1	12,287.50	1.82	0.08	
FES x Grade	5	21,611.34	3.21*	0.73	
Race x Grade	5	435,448.75	64.65**	14.75	
FES x Race x Grade	5	23,588.67	3.50*	0.80	
Residual	15,048	6,735.28			
Total Percent of Variance Accounted for by the Model					31.35

**Significance at the 0.01 level
*Significance at the 0.05 level

Table A-3

Analyses-of-Variance of Total Hours of Math Offered by Family Economic Status, Math Achievement, Math CE Selection Status, Race, and Grade (1976-77)

Math Offered Effects	df	Mean Square	F-ratio	Percent of Variance Accounted For	
Family Economic Status, Math Achievement, and Math CE Selection Status					
Family Economic Status (FES)	1	241,838.91	105.65**	0.68	
Math Achievement (MA)	3	14,246.11	6.22**	0.12	
Math CE Selection (MCE)	2	253,556.80	110.77**	1.42	
FES x MA	3	2,591.38	1.13	0.02	
FES x MCE	2	18,424.43	8.05**	0.10	
MA x MCE	6	10,188.08	4.45**	0.17	
FES x MA x MCE	6	1,159.08	0.51	0.02	
Residual	15,037	2,289.03			
Total Percent of Variance Accounted for by the Model					3.35
Family Economic Status, Race and Grade					
Family Economic Status (FES)	1	235,498.77	104.03**	0.44	
Race	1	176,805.63	78.10**	0.33	
Grade	5	30,418.55	13.44**	0.29	
FES x Race	1	934.71	0.41	0.00	
FES x Grade	5	5,533.52	2.44*	0.05	
Race x Grade	5	54,292.67	23.98**	0.51	
FES x Race x Grade	5	5,086.57	2.25	0.05	
Residual	15,048	2,263.84			
Total Percent of Variance Accounted for by the Model					2.20

**Significance at the 0.01 level
*Significance at the 0.05 level

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Table A-4

Analyses-of-Variance of Total Hours of Reading Attended by Family Economic Status, Reading Achievement, Reading CE Selection Status, Race, and Grade (1976-77)

Reading Attended Effects	df	Mean Square	F-ratio	Percent of Variance Accounted For	
Family Economic Status, Reading Achievement, and Reading CE Selection Status					
Family Economic Status (FES)	1	0.10	0.00	0.00	
Reading Achievement (RA)	3	37,593.78	4.24**	0.08	
Reading CE Selection (RCE)	2	699,225.92	78.80**	1.03	
FES x RA	3	33,123.06	3.73*	0.07	
FES x RCE	2	32,468.53	3.66*	0.05	
RA x RCE	6	20,649.99	2.33*	0.09	
FES x RA x RCE	6	17,414.69	1.96	0.08	
Residual	15,050	8,873.22			
Total Percent of Variance Accounted for by the Model					1.69
Family Economic Status, Race and Grade					
Family Economic Status (FES)	1	50,351.92	7.98**	0.04	
Race	1	9,960.95	1.58	0.01	
Grade	5	7,471,937.06	1,184.70**	27.59	
FES x Race	1	8,592.47	1.36	0.01	
FES x Grade	5	24,509.60	3.90**	0.09	
Race x Grade	5	409,324.98	64.90**	1.51	
FES x Race x Grade	5	14,288.99	2.27*	0.05	
Residual	15,048	6,307.02			
Total Percent of Variance Accounted for by the Model					29.91

**Significance at the 0.01 level
*Significance at the 0.05 level

Table A-5

Analyses-of-Variance of Total Hours of Math Attended by Family Economic Status, Math Achievement, Math CE Selection Status, Race, and Grade (1976-77)

Math Attended Effects	df	Mean Square	F-ratio	Percent of Variance Accounted For	
Family Economic Status, Math Achievement, and Math CE Selection Status					
Family Economic Status (FES)	1	71,146.67	33.45**	0.22	
Math Achievement (MA	3	3,188.64	1.50	0.03	
Math CE Selection (MCE)	2	201,376.91	94.67**	1.23	
FES x MA	3	947.63	0.45	0.01	
FES x MCE	2	8,165.54	3.84	0.03	
MA x MCE	6	8,238.38	3.87**	0.15	
FES x MA x MCE	6	571.52	0.27	0.01	
Residual	15,037	2,127.05			
Total Percent of Variance Accounted for by the Model					2.04
Family Economic Status, Race and Grade					
Family Economic Status (FES)	1	52,900.43	25.20**	0.16	
Race	1	139,564.14	66.48**	0.43	
Grade	5	29,251.98	13.93**	0.45	
FES x Race	1	182.16	0.09	0.00	
FES x Grade	5	6,199.95	2.95*	0.10	
Race x Grade	5	56,055.27	26.70**	0.87	
FES x Race x Grade	5	3,085.37	1.47	0.05	
Residual	15,048	2,099.37			
Total Percent of Variance Accounted for by the Model					2.48

**Significance at the 0.01 level
*Significance at the 0.05 level

APPENDIX B. ANALYSES-OF-VARIANCE FOR CHAPTER 4

These analyses-of-variance were performed to assist the authors in examining the impact of one of the principal independent variables, family economic status, on the amount of educational services offered and attended both singly and in conjunction with other independent variables. Explanation of contributing factors to the amount of educational services provided students was not the goal of these analyses. It is recognized that correlated student attributes such as economic status, CE selection status, etc., constitute the principal independent variables for the study. Such attributes used in a fixed effects model will seldom yield a true picture of variance accounted for in the dependent variable by a particular combination of attributes. Even though the analysis-of-variance is a robust statistical test, the significant F-ratios in the following tables should be interpreted with caution because of the generally small percent of variance accounted for and the large sample size.

The degrees of freedom for the residual vary slightly from model to model due to missing values for some of the cases. The categories for each of the independent variables are identical to those presented in the report: for family economic status they are Poor/AFDC and Non-Poor; for reading and math achievement they are Bottom Quarter, Second Quarter, Third Quarter and Top Quarter; for reading and math CE selection status they are Title I, Other CE Only, No CE; for race, they are Majority and Minority; and, for grade, one through six.

Table B-1

Analyses-of-Variance of Reading Services According to Instructor Type by Family Economic Status, Reading Achievement CE Selection Status, Race, and Grade (1976-77)

Reading Services by Instructional Type	df	Mean Square	F-ratio	Percent of Variance Accounted For	Total Percent of Variance Accounted For by the Model
Total Hours of Reading With a Regular Teacher					
Family Economic Status (FES)	1	10,548.5	1.82	0.01	
Reading Achievement (RA)	3	28,998.1	4.99**	0.10	
Reading CE Selection (RCE)	2	166,538.1	28.67**	0.38	
FES x RA	3	18,151.0	3.13*	0.06	0.78
FES x RCE	2	21,338.8	3.67*	0.05	
RA x RCE	6	13,975.6	2.41*	0.10	
FES x RA x RCE	6	6,368.9	1.10	0.04	
Residual	15,050	5,809.1			
Family Economic Status (FES)	1	400.8	0.08	0.0@	
Race	1	12,034.4	2.43	0.01	
Grade	5	2,447,412.5	493.31**	13.91	
FES x Race	1	67,246.6	13.56**	0.08	15.11
FES x Grade	5	20,548.8	4.14**	0.12	
Race x Grade	5	105,354.4	21.24*	0.60	
FES x Race x Grade	5	13,886.9	2.80**	0.08	
Residual	15,048	4,961.2			
Total Hours of Reading With a Non-Regular Teacher					
Family Economic Status (FES)	1	17,476.6	18.78**	0.08	
Reading Achievement (RA)	3	85,961.0	92.38**	1.24	
Reading CE Selection (RCE)	2	2,240,299.1	2407.59**	21.60	
FES x RA	3	47.4	0.05	0.0@	32.50
FES x RCE	2	4,816.6	5.17**	0.05	
RA x RCE	6	21,204.4	22.79**	0.61	
FES x RA x RCE	6	4,024.9	4.33**	0.12	
Residual	15,050	930.5			
Family Economic Status (FES)	1	274,766.3	211.01**	1.32	
Race	1	239,449.2	183.89**	1.15	
Grade	5	52,710.3	40.48**	1.27	
FES x Race	1	20,611.9	15.83**	0.10	5.69
FES x Grade	5	3,765.7	2.89*	0.09	
Race x Grade	5	2,473.3	1.90	0.06	
FES x Race x Grade	5	8,997.0	6.91**	0.22	
Residual	15,048	1,302.2			
Total Hours of Reading Independent of Teacher					
Family Economic Status (FES)	1	58,347.5	18.22**	0.12	
Reading Achievement (RA)	3	41,960.2	13.10**	0.26	
Reading CE Selection (RCE)	2	125,142.9	39.08**	0.52	
FES x RA	3	4,528.0	1.41	0.03	1.74
FES x RCE	2	363.8	0.11	0.0@	
RA x RCE	6	12,919.6	4.04**	0.16	
FES x RA x RCE	6	6,278.8	1.96	0.08	
Residual	15,050	3,203.0			
Family Economic Status (FES)	1	105,240.9	36.64**	0.22	
Race	1	80,542.9	28.04**	0.16	
Grade	5	935,658.8	325.73**	9.56	
FES x Race	1	610.1	0.21	0.0@	11.72
FES x Grade	5	7,700.3	2.68*	0.07	
Race x Grade	5	114,471.1	39.85**	1.17	
FES x Race x Grade	5	3,871.3	1.35	0.04	
Residual	15,048	2,872.5			

**Significant at the 0.01 level
*Significant at the 0.05 level
@Less than 0.01% of the variance accounted for

Table B-2

Analyses-of-Variance of Reading Services According to Instructional Setting by Family Economic Status, Reading Achievement, CE Selection Status, Race, and Grade (1976-77)

Reading Services by Instructional Setting	df	Mean Square	F-ration	Percent of Variance Accounted For	Total Percent of Variance Accounted For by the Model
Total Hours of Reading In A Class with 14 or More Students					
Family Economic Status (FES)	1	38,136.4	8.27**	0.05	
Reading Achievement (RA)	3	47,139.6	10.22**	0.20	
Reading CE Selection (RCE)	2	587,389.4	127.31**	1.65	
FES x RA	3	5,983.4	1.30	0.03	2.40
FES x RCE	2	16,640.0	3.61*	0.05	
RA x RCE	6	5,347.0	1.16	0.05	
FES x RA x RCE	6	11,166.4	2.42	0.09	
Residual	15,050	4,614.0			
Family Economic Status (FES)	1	75.0	0.01	0.0@	
Race	1	17,124.1	3.68	0.02	
Grade	5	17,247.7	3.70**	0.12	
FES x Race	1	143,579.1	30.81**	0.20	1.04
FES x Grade	5	19,771.9	4.24**	0.14	
Race x Grade	5	23,707.9	5.09**	0.17	
FES x Race x Grade	5	30,723.9	6.59**	0.22	
Residual	15,048	4,659.9			
Total Hours of Reading In A Class With 2-13 Students					
Family Economic Status (FES)	1	4,275.3	0.80	0.0@	
Reading Achievement (RA)	3	193,338.4	35.93**	0.64	
Reading CE Selection (RCE)	2	3,132,310.2	582.13**	6.91	
FES x RA	3	21,694.2	4.03**	0.07	10.68
FES x RCE	2	14,372.5	2.67	0.03	
RA x RCE	6	10,523.6	1.96	0.07	
FES x RA x RCE	6	10,323.8	1.92	0.07	
Residual	15,050	5,380.8			
Family Economic Status (FES)	1	317,393.9	65.23**	0.35	
Race	1	224,198.5	46.08**	0.25	
Grade	5	3,171,101.1	651.76**	17.47	
FES x Race	1	55,073.0	11.32**	0.06	19.33
FES x Grade	5	10,106.1	2.08	0.06	
Race x Grade	5	81,264.4	16.70**	0.45	
FES x Race x Grade	5	10,544.9	2.17	0.06	
Residual	15,048	4,865.4			
Total Hours of Reading In A Class Independent of Teacher					
Family Economic Status (FES)	1	71,565.2	21.80**	0.14	
Reading Achievement (RA)	3	36,333.0	11.07**	0.22	
Reading CE Selection (RCE)	2	129,912.9	39.58**	0.52	
FES x RA	3	4,398.9	1.34	0.03	1.69
FES x RCE	2	292.2	0.09	0.0@	
RA x RCE	6	14,124.3	4.30**	0.17	
FES x RA x RCE	6	6,058.4	1.85	0.07	
Residual	15,050	3,282.4			
Family Economic Status (FES)	1	123,456.2	42.26**	0.25	
Race	1	60,873.7	20.84**	0.12	
Grade	5	1,032,720.6	353.53**	10.29	
FES x Race	1	2,807.1	0.96	0.01	12.40
FES x Grade	5	8,729.5	7.99	0.09	
Race x Grade	5	112,912.9	38.65**	1.13	
FES x Race x Grade	5	1,869.4	0.64	0.02	
Residual	15,048	2,921.1			

**Significant at the 0.01 level
*Significant at the 0.05 level
@Less than 0.01% of the variance accounted for

Table B-3

Analyses-of-Variance of Math Services According to Instructor Type by Family Economic Status, Math Achievement, CE Selection Status, Race, and Grade (1976-77)

Math Services By Instructor Type	df	Mean Square	F-ratio	Percent of Variance Accounted For	Total Percent of Variance Accounted For by the Model
Total Hours of Math With a Regular Teacher					
Family Economic Status (FES)	1	848,975.2	5.32*	0.04	
Math Achievement (MA)	3	185,005.5	1.16	0.02	
Math CE Selection (MCE)	2	367,515.4	2.30	0.03	
FES x MA	3	335,771.1	2.10	0.04	0.15
FES x MCE	2	113,787.8	0.71	0.01	
MA x MCE	6	33,447.4	0.21	0.01	
FES x MA x MCE	6	19,845.1	0.12	0.0@	
Residual	15,037	159,552.4			
Family Economic Status (FES)	1	797,464.4	5.70*	0.04	
Race	1	30,780.3	0.22	0.0@	
Grade	5	87,275.4	0.62	0.02	
FES x Race	1	211.0	0.00	0.0@	0.22
FES x Grade	5	131,210.3	0.94	0.03	
Race x Grade	5	201,927.9	1.44	0.48	
FES x Race x Grade	5	243,230.5	1.74	0.58	
Residual	15,048	139,890.4			
Total Hours of Math With a Non-Regular Teacher					
Family Economic Status (FES)	1	653,396.2	4.12*	0.03	
Math Achievement (MA)	3	298,997.6	1.88	0.04	
Math CE Selection (MCE)	2	362,333.8	2.28	0.03	
FES x MA	3	306,778.2	1.93	0.04	0.20
FES x MCE	2	24,208.3	0.15	0.0@	
MA x MCE	6	27,197.7	0.17	0.0@	
FES x MA x MCE	6	37,355.0	0.24	0.01	
Residual	15,037	158,727.4			
Family Economic Status (FES)	1	1,001,432.0	7.20**	0.05	
Race	1	153,256.1	1.10	0.01	
Grade	5	65,509.4	0.47	0.02	
FES x Race	1	587.0	0.00	0.0@	0.24
FES x Grade	5	120,462.6	0.87	0.03	
Race x Grade	5	143,038.3	1.03	0.03	
FES x Race x Grade	5	270,864.7	1.95	0.07	
Residual	15,048	139,022.7			
Total Hours of Math Independent of Teacher					
Family Economic Status (FES)	1	53,370.0	1.31	0.01	
Math Achievement (MA)	3	16,177.2	0.40	0.01	
Math CE Selection (MCE)	2	74,496.9	1.82	0.02	
FES x MA	3	70,740.6	1.73	0.03	0.09
FES x MCE	2	37,769.4	0.93	0.01	
MA x MCE	6	2,799.4	0.07	0.0@	
FES x MA x MCE	6	6,099.4	0.15	0.0@	
Residual	15,037	40,843.8			
Family Economic Status (FES)	1	64,738.2	1.81	0.01	
Race	1	34,550.5	0.96	0.01	
Grade	5	156,578.5	4.37**	0.15	
FES x Race	1	0.4	0.00	0.0@	0.30
FES x Grade	5	35,225.2	0.98	0.03	
Race x Grade	5	53,757.4	1.50	0.05	
FES x Race x Grade	5	62,040.2	1.73	0.06	
Residual	15,048	35,869.8			

**Significant at the 0.01 level
*Significant at the 0.05 level
@Less than 0.01% of the variance accounted for

Table B-4

Analyses-of-Variance of Math Services According to Instructional Setting by Family Economic Status, Math Achievement, CE Selection Status, Race, and Grade (1976-77)

Math Services By Instructional Setting	df	Mean Square	F-ratio	Percent of Variance Accounted For	Total Percent of Variance Accounted For by the Model
Total Hours of Math In A Class With 14 or More Students					
Family Economic Status (FES)	1	150,740.2	3.60	0.02	
Math Achievement (MA)	3	11,765.4	0.28	0.0@	
Math CE Selection (MCE)	2	652,991.8	15.58**	0.21	
FES x MA	3	104,498.5	2.49	0.05	0.30
FES x MCE	2	27,280.9	0.65	0.01	
MA x MCE	6	7,646.3	0.18	0.0@	
FES x MA x MCE	6	10,573.8	0.25	0.01	
Residual	15,037	41,913.4			
Family Economic Status (FES)	1	120,445.7	3.25	0.02	
Race	1	34,630.2	0.94	0.01	
Grade	5	40,120.2	1.08	0.04	
FES x Race	1	44,042.0	1.19	0.01	0.25
FES x Grade	5	49,085.7	1.33	0.04	
Race x Grade	5	85,524.1	2.31*	0.08	
FES x Race x Grade	5	42,330.9	1.14	0.04	
Residual	15,048	37,050.6			
Total Hours of Math In A Class With 2-13 Students					
Family Economic Status (FES)	1	1,380,200.5	5.54*	0.04	
Math Achievement (MA)	3	575,594.4	2.31	0.05	
Math CE Selection (MCE)	2	573,338.7	2.30	0.03	
FES x MA	3	451,758.1	1.82	0.04	0.22
FES x MCE	2	74,057.7	0.30	0.0@	
MA x MCE	6	49,923.4	0.20	0.0@	
FES x MA x MCE	6	36,590.4	0.15	0.0@	
Residual	15,037	248,948.0			
Family Economic Status (FES)	1	1,837,810.2	8.42**	0.06	
Race	1	533,442.5	2.45	0.02	
Grade	5	121,824.4	0.56	0.02	
FES x Race	1	45,659.1	0.21	0.0@	0.28
FES x Grade	5	179,297.8	0.82	0.03	
Race x Grade	5	216,353.5	0.99	0.03	
FES x Race x Grade	5	483,185.7	2.22*	0.07	
Residual	15,048	218,161.8			
Total Hours of Math In A Class Independent of Teacher					
Family Economic Status (FES)	1	158,188.5	1.75	0.01	
Math Achievement (MA)	3	59,373.1	0.66	0.01	
Math CE Selection (MCE)	2	87,472.3	0.97	0.01	
FES x MA	3	162,750.2	1.80	0.04	0.09
FES x MCE	2	62,564.6	0.69	0.01	
MA x MCE	6	8,035.6	0.09	0.0@	
FES x MA x MCE	6	14,260.5	0.16	0.0@	
Residual	15,037	90,277.3			
Family Economic Status (FES)	1	198,508.0	2.51	0.02	
Race	1	26,670.7	0.34	0.0@	
Grade	5	182,477.3	2.31*	0.08	
FES x Race	1	43.7	0.00	0.0@	0.23
FES x Grade	5	75,637.9	0.96	0.03	
Race x Grade	5	95,701.9	1.21	0.04	
FES x Race x Grade	5	145,159.9	1.83	0.06	
Residual	15,048	79,131.8			

**Significant at the 0.01 level
*Significant at the 0.05 level
@Less than 0.01% of the variance accounted for

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